FEB 6 1943

the OIL AND GAS JOURNAL

THE TANKS BEHIND THE TANKS

at Guadalcanal

(Reading time 37 seconds)

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FEBRUARY 4, 1943

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the OIL AND GAS JOURNAL

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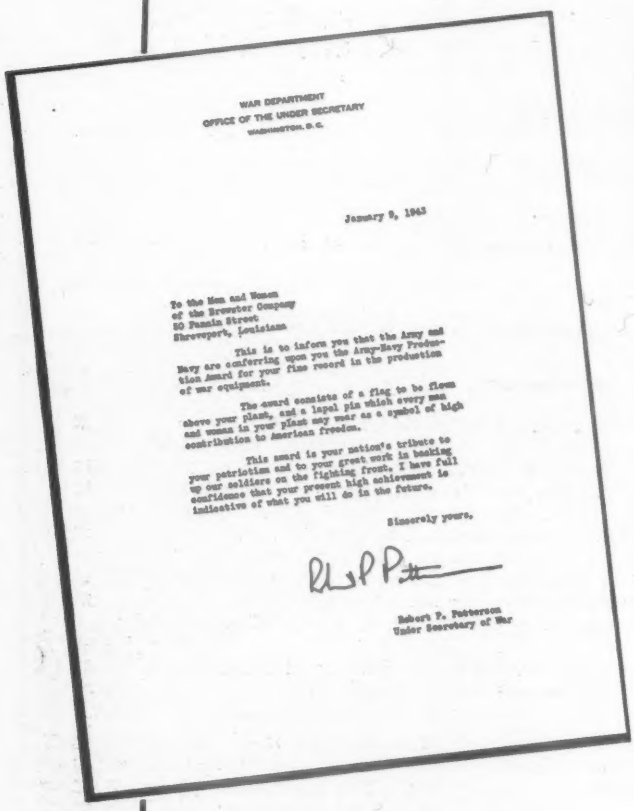

WAR DEPARTMENT
OFFICE OF THE UNDER SECRETARY
WASHINGTON, D. C.

January 9, 1943

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Robert P. Patterson
Under Secretary of War

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the OIL AND GAS JOURNAL

Trends

Crude-Oil Production
By States — Page 60

CRUDE PRODUCTION 3,830,885 bbl. daily average—down 18,440 bbl. One year ago 3,868,300 bbl.

CRUDE STOCKS* 233,733,000 bbl. as of Jan. 23—up 886,000 bbl. One year ago 248,164,000 bbl.

GASOLINE STOCKS 87,102,000 bbl. as of Jan. 23—up 2,147,000 bbl. One year ago 99,345,000 bbl.

RESIDUAL FUEL-OIL STOCKS 71,216,000 bbl. as of Jan. 23—down 301,000 bbl. One year ago 90,764,000.

GAS OIL AND DISTILLATES 38,034,000 bbl. as of Jan. 23—down 1,807,000 bbl. One year ago 42,307,000.

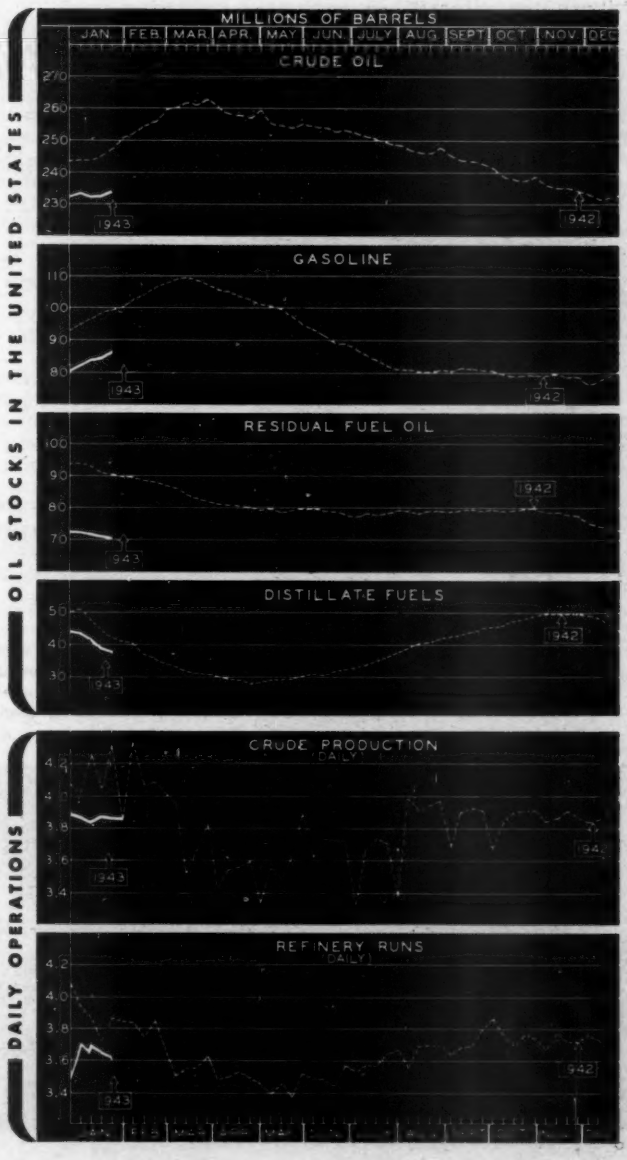
REFINERY RUNS — 3,615,000 bbl. daily week ended Jan. 23—down 25,000 bbl. One year ago 3,874,000.

*Last week revised to 232,847,000 bbl. Refinery report delayed.

THERE was additional evidence over the past week that war agencies realize that certain petroleum operations must have more materials quickly if they are to complete construction programs in time to support the military program later in the year. Synthetic rubber was given a top priority rating covering 43 per cent of the entire program which calls for the production of approximately 1 million tons yearly by the early part of 1944. A similar plan was adopted for 100-octane gasoline the latter part of 1942. This in effect means that certain rubber and aviation plants now under construction will be given preference in the matter of materials and these plants will be on a parity with other most essential war construction.

THE decision to build a 20-in. line from Beaumont, Tex., to Seymour, Ind., is another indication that Washington realizes the part that oil has in the conduct of the war. Unlike the 24-in. line from East Texas to the East Coast, steel and other equipment for the 20-in., will come largely from materials previously allocated to war production for the Army and Navy. The two large lines, so long as the emergency lasts, will be used to secure the maximum efficiency in transporting oil for military and essential civilian use. Decision to build the 20-in. is interpreted as evidence that the Army and Navy want that additional assurance later this year that oil supplies in the eastern part of the United States will be sufficient to support any war offensive under way in the European area at that time.

THOSE in touch with conditions agree that the priority plan which has been made effective in the case of synthetic rubber and aviation gasoline will expedite the completion of the entire program although it will for a time partially stop some of the construction. Under conditions as they prevailed for several months, materials and manpower were spread out thinly over many jobs with numerous delays in construction. Under the new plan the jobs farthest advanced will be completed as quickly as possible with the remaining construction confined to the use of materials generally available at this time. As plants are completed manpower and materials will be moved to the remaining plants. Rubber companies are particularly anxious that large quantities of butadiene be made available from refineries soon so that they can round out operations of copolymerization and final manufacture of rubber products.



More Conclusive Cost Data Needed To Unseat OPA Policy on Oil

by H. Stanley Norman

CONFIDENCE of the oil industry that economic relief would be granted this month or in the near future received a severe reversal last week and operators were convinced that much additional educational work remains to be done.

Prospects of a blanket price adjustment on crude oil and products—one without the other would aggravate existing maladjustments—were blasted by the Office of Price Administration announcement February 1. Continuance of OPA policies along the general lines previously created under direction of Leon Henderson, who has been succeeded by former Sen. Prentiss Brown, appears certain in view of last Monday's enunciation. OPA declared that a "general advance in crude-oil prices for the nation's oil producers is not justified at this time." The price agency went ahead to explain that its decision is based essentially on conclusions reached in the U. S. Tariff Commission report on production costs released last week but covering in detail only through the first 9 months of 1941. Oil men throughout the country were quick to challenge the U. S. Tariff Commission report as "obsolete" and asserted that it failed to take into account most of the economic developments of the war period since this country became an active combatant.

Prentiss M. Brown, new director of the Office of Price Administration, temporarily blasted hopes for a general oil-price advance by issuing a statement this week that such action is not now justified

Brown Assails Report

"The first impression of the report," declared Russell Brown, general counsel of the Independent Petroleum Association of America, referring to the Tariff Commission survey, "indicates that while there are some 19,000 producers in the United States, they were able to obtain factual information from only 2,534 producers and that although there are only 2,534 producers covered by this report their total production amounts to 70 per cent of the total production of the United States. This would indicate that the report covers companies of larger production.

"Certain trends are indicated which show that for the 60 largest producers reporting the operating costs of production for the period from the second quarter of 1941 to the second quarter of 1942 had increased 16.5 per cent.

"Crude-oil prices were frozen as of October 1941. The most comprehensive portion of the Tariff Commission's survey ends with the third quarter of 1941. In any calculation of today's costs, September 30, 1941, is not a fair place to end a survey, whether it be on farming, producing oil, or setting the family table."

The OPA announcement of crude-price policy, however, leaves the door open for individual field adjustments to cope with special conditions or where costs have risen disproportionately to other areas.

"This attitude toward a general increase in crude price," the price agency said, "does not mean the door has been closed against consideration of local, regional, or area price problems arising from abnormalities, undue hardships arising from oil shortages, and uneconomic price structures." Already, OPA has modified certain price ceilings as special conditions have arisen. For example, price ceilings were lifted in several southwestern fields last week where, OPA said, the October 1941, prices were based on unusual conditions and did not reflect the current market value. Earlier, OPA granted Pennsylvania producers an increase of 25 cents per barrel in an effort to stimulate production. Two weeks ago, the agency lifted ceilings on heavy fuel oils in the southwestern refining district in order to encourage production of residual products and to blending of light heating oils with residuals.

The price agency reaffirmed its doubt that a general price increase in crude would increase the rate of finding new reserves, a stand challenged by many elements in the industry. OPA's statement said that "the problem of current exploration or finding costs has been before the interested federal agencies handling

(Continued on Page 29)

THIS WEEK

MARKETS—OPA doused hopes for an early thaw of general crude-price ceilings. . . . ¶Issues statement asserting such action unjustified—BUT leaves door open for special cases. . . . ¶Rejection of price pleas shows need for stronger preparation of case, more missionary work to upset illusion of "turn the valve"—there's plenty, for everything. . . . ¶Broader use of premiums to stimulate fuel-oil production advocated by PIWC. . . . ¶Says recent adoption of gravity scale in Southwest step in right direction. . . . ¶Californians submit formula, calling for advances of 37 to 50 cents per barrel. . . .

REFINING—First government-sponsored, petroleum-butadiene plant starts operation. . . . ¶It's a 6,600 to 9,000-ton unit, at Standard of Louisiana's Baton Rouge, La., plant. . . . ¶Operating know-how previously attained from smaller, company-built and operated unit, now a year old. . . . ¶New hydrofluoric acid alkylation plant goes into operation—several others are abuilding. . . . ¶Phillips Petroleum Co. invites 130 odd representatives of other refineries, government agencies, construction companies to Borger, Tex., this week end for inspection. . . . ¶Company also discloses new catalytic conversion process, for increasing aromatic content of product. . . .

PRODUCTION—Upward adjustments in Texas allowables, for February, spread to fields yielding special crudes. . . . Compensating reductions ordered in others. . . . Shows war plants in the saddle, proration responsibilities yielding to necessity. . . .

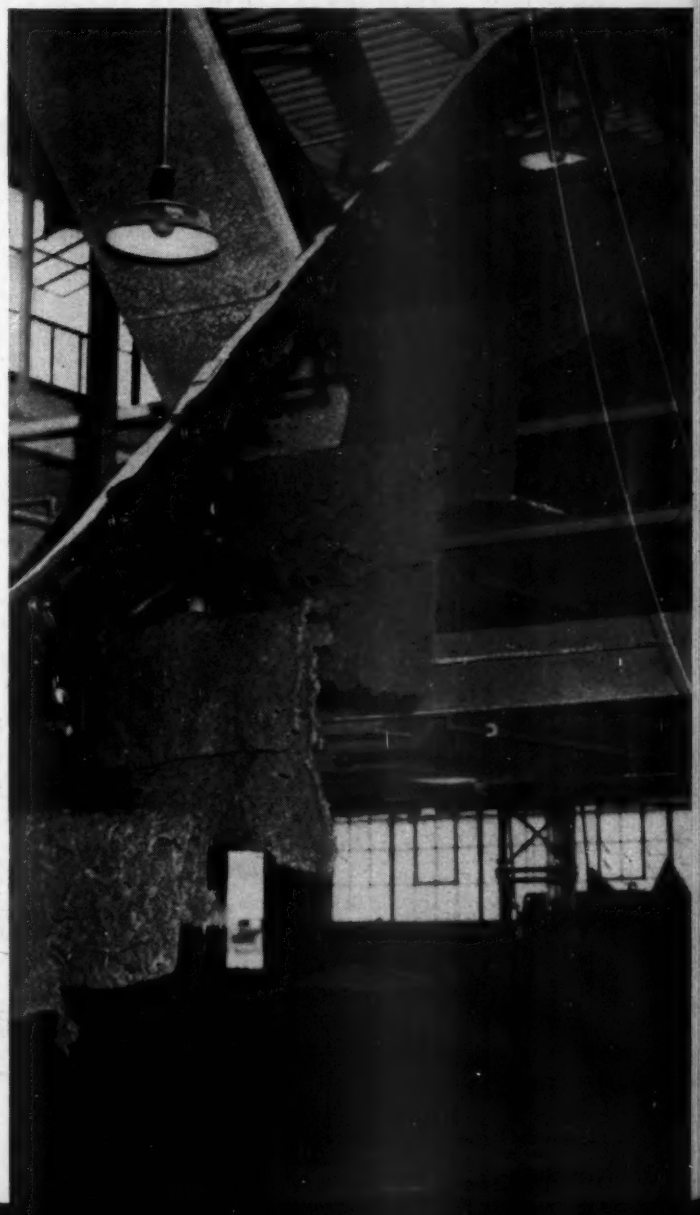
RUBBER—Top priorities granted 43.6 per cent of synthetic-plant capacity. . . . ¶Remainder of program sidetracked, temporarily, to make way for escort vessels, 100-octane units. . . . ¶Director Jeffers still fighting for higher ratings on larger share—BUT present program, decided by Economic Stabilizer Byrnes, likely to stand—UNTIL Army and Navy plans are satisfied. . . .

PRIORITIES—Higher preference ratings assigned industry, by amendment to P-98-b. . . . Ratings of AA-1 and AA-2X authorized, for repair, maintenance, and operating supplies. . . . ¶Equipment men see little improvement, consider move another step in priority inflation. . . . ¶Transfers of materials between branches of same company, without priority rating, sanctioned, in amendment to P-98-c. . . .

RATIONING—Period 4 fuel-oil coupons cut 11 per cent in six eastern states. . . . ¶PAW instructs OPA to ration fuel oil in two northwestern states, aiming at 25 per cent reduction. . . . ¶Authorities hint at transfer of tankers to Atlantic service. . . . ¶PIWC forecasts relief for East Coast after March, providing present restrictions continue until then and no other unforeseen interferences arise. . . .

TRANSPORTATION—Tank-car shipments skid slightly, averaged 798,552 bbl. daily, last week. . . . ¶Bayou Pipe Line Co. ready to start operation—links Houston refineries with Plantation products system. . . . ¶British tanker and supply mission conferring in Washington. . . .

Production from the first government-sponsored petroleum-butadiene plant was added this week to the trickle of synthetic rubber which, before the year is over, will swell to a rate of 452,000 tons annually. Here, slabs of synthetic rubber are en route to the shipping room at a Defense Plant Corp. building operated by Goodyear



Special committee of the Petroleum Industry War Council studying the effect of government drilling restrictions on the status of oil and gas lease contracts, meeting in Washington January 26. Present were: A. M. Gee, Ohio Oil Co., Findlay, Ohio; William R. Boyd, Jr., chairman of PIWC; Wallace E. Hawkins, Magnolia Petroleum Co., Dallas, Tex.; Charles I. Francis, committee chairman, Houston, Tex.; Gilbert Mueller, Argo Oil Co., Denver, Colo.; Forrest Darrough (Carter Oil Co.), Mid-Continent Oil and Gas Association, Tulsa; Don Emery, Phillips Petroleum Co., Bartlesville, Okla.

Easier East Coast Supply Situation Predicted After March by PIWC

WASHINGTON, D. C. — The East Coast oil shortage has been reduced and the curtailed demand can be met by reduction of stocks to critically low levels during the next 6 weeks but after March it should be possible to remove some of the restrictions on use, the committee on petroleum economics reported to the Petroleum Industry War Council at its monthly meeting here February 2.

Due to drastic steps taken along lines indicated by the committee previously, resulting in added transportation to District 1 and reduction in consumption, East Coast supplies have been brought much more nearly into balance with restricted demands.

Conclusions of the committee are:

"1. Stocks during February and the first half of March will remain at critically low levels so that little relief can be expected before the end of March from the serious distribution difficulties now experienced.

"2. Gasoline shipments into District 1 must be kept to the minimum requiring continuation of the present prohibition on tank-car shipments of gasoline in the district keeping local refinery yields of gasoline to lowest possible levels.

"3. Recent severe restrictions on passenger-car use on the East Coast are justified as emergency measures, but as soon as emergency situation in fuel oils is overcome they should be relaxed within the limits of coupon values, which would still leave consumption per car well below the rest of country.

"4. The recent OPA additional cut of 11 per cent in value of fuel-oil coupons in New York and New England was unnecessary and inequitable.

"5. Adjustment of refinery runs in Districts 1, 2 and 3 is urgent to maintain maximum output of war products.

"6. Average fuel-oil yields in Districts 1, 2 and 3 must be increased at the expense of gasoline, and the basic difficulty remains the failure to adjust price ceilings to make this possible."

Highlights from the report follow:

The indicated deficiency between current estimated supplies and anticipated consumption for the first quarter of 72,000 bbl. per day, which must be met by stock withdrawal, is 129,000 bbl. daily less than forecast in the last report. The improvement is dut to 34,000 bbl. per day increase in

Estimated Supply and Demand

(Thousands of barrels)

Presently Anticipated Deliverable Supplies

	January 1942	February 1943	March 1943	Average 1943	First quarter
Local production	77	78	79	78	79
Receipts by rail (including effect of War Emergency Pipeline)	741	791	826	881	832
By pipe line	158	166	188	198	183
By barge and tanker	182	180	152	177	171
Total supplies	1,159	1,215	1,243	1,334	1,265

Presently Anticipated Total Demand

(Basis of restrictions to January 25)

Local and export	471	442	453	451	449
Gasoline	471	442	453	451	449
Kerosene	147	156	155	138	149
Distillate fuels	392	363	316	277	319
Residual fuel	335	283	306	301	297
Other	71	105	96	96	100
To other districts	26	23	23	23	23
Total demand	1,442	1,374	1,348	1,288	1,337
Resultant required changes in stocks	—283	—159	—105	—46	—72

anticipated supplies and 95,000 bbl. per day reduction in anticipated demand. The improvement in supplies is owing to higher tank-car deliveries, as estimated by the PAW in the light of all remedial measures adopted to date, including some drum shipments of kerosene in box cars. The reduction in anticipated demand is made up of 36,000 bbl. per day further reduction in gasoline demand, largely as the result of restrictions on driving, and 59,000 bbl. per day further reduction in demand for fuel oils, due principally to the lowering of heating-coupon values, reduction in fuel used for nonresidential heating, and the effect of recent allocation orders on fuel oil and asphalt consumption.

While the figures indicate that restricted demands can just barely be met when drawing stocks to critical minimums, this can only be achieved if the anticipated reductions in consumption and increases in supplies are realized and continued, at least through the first half of March.

Cars Needed for Fuel

The recent restrictions on driving means that in order to take full advantage of the resulting reduction in motor-fuel consumption, transportation facilities must not only be taken from gasoline service but definitely utilized for bringing in increased supplies of kerosene, distillate and residual fuel oil into District 1. Otherwise, East Coast gasoline stocks would rise above minimum required levels and stocks of fuel oils would be reduced to below critical minimums, causing more serious shortages than are now being experienced.

By the latter part of March, the situation should tend to become easier, but will be controlled by the severity of the winter and the extent of military demands upon District 1. Preliminary figures on supply and demand for the second quarter indicate that substantial additional supplies will be available for military requirements and the necessary rebuilding of stock levels, even though the severe restrictions on passenger car use be relaxed within the limits of the unit values for passenger cars gasoline coupons.

The approval by the WPB of the 20-in. product line from Beaumont, Tex., to Seymour, Ind., now estimated to be completed in September, will be of material assistance in augmenting East Coast supplies and improving the District 1 stock situation this coming fall. The committee feels that all indications point to the justification of the extension of this line on to the East Coast. If this line is carried through to the East Coast before the end of the year the whole situation will be much easier.

Looking at the situation for the country as a whole, it would appear that the major lack of balance be-

(Continued on Page 17)

Federal Order Digest

PAW Directives

Fuel Oil—Decision reached that 25 per cent cut in fuel-oil consumption in states of Washington and Oregon is necessary. OPA advised to institute rationing accordingly.

WPB Priority Orders

Oil Equipment—PRO P-98-b, amended: Assigns higher preference ratings for maintenance, repair and operating supplies, effective January 29.

Oil Equipment—PRO P-98-c, amended: Authorizes transfers of inventory stock of materials from one branch of an oil company to another branch of same company, effective January 29.

Chemical Supplies — PRO P-89, amended: Allows producers to apply higher priority ratings for purchase of maintenance, repair and operating equipment, effective January 30.

Sulfuric Acid—GPO M-257, amended: Revokes requirement that producers fill out Table 2, Form PD-601, covering actual production and inventory figures and future estimates, effective January 30.

Organic Pigments — GPO M-103, amended: Tightens controls over dyes and organic pigments, to conserve benzene, aniline, toluene, etc., retroactive to January 1.

Automobiles—CO M-216-a, amended: Sets minimum standards for automobiles, trucks and trailers in hands of producers, dealers and agents before transfer to buyers, effective January 23.

OPA Ration Orders

Durable Goods—RO 9, Amendment 1: Makes rationed coal stoves available to provide supplementary heat where oil ration is insufficient for health and comfort, effective January 28.

Gasoline—RO 5-c, Amendment 15: Prohibits use of gasoline in motor boats for pleasure in eastern shortage area, effective January 26.

Gasoline—RO 5-c, Amendment 19: Allows bulk users of gasoline, unable to get supplies of new-type bulk coupons, to buy gasoline on coupon credit basis for few days, effective January 28.

Fuel Oil—RO-11, Amendment 30: Sets up emergency procedure enabling rationed householders to acquire up to 50 gal. of fuel oil in minimum time, effective February 1.

Fuel Oil — RO-11, Amendment 31: Double allowance of heating oil for war workers living in trailers, dependent on oil-burning stoves for heat, effective February 2.

Fuel Oil — RO 11, Amendment 33: Authorizes regional administrators to establish priorities among fuel-oil consumers in shortage area, effective January 27.

Automobiles—Passenger-car quotas: Authorizes rationed distribution of 29,650 new passenger automobiles in February.

Ration Banking—GRO 3-a: Sets up procedure for ration bank accounts by primary distributors, effective January 27.

OPA Price Orders

Fuel Oil—RPS 88, Amendment 61: Sets specific maximum dollars and cents ceilings for Pacific Standard 300 and 400 fuel oils, effective January 26.

Petroleum — RPS 88, Amendment 63: Clarifies formula for crude-oil ceilings, seeks to eliminate inequities freezing prices below posted prices at base period, effective February 3.

Petroleum — RPS 88, Amendment 64: Establishes higher ceiling prices for crude in several Texas, Louisiana, Kentucky and Arkansas fields, effective February 3.

Fuel — RPS 88, Amendment 60: Sharply reduces maximum prices of substitutes sold as antifreeze, effective February 1.

Petroleum Products — MPR 137, Amendment 19: Sets lower maximum prices at retail for antifreeze substitutes, effective February 1.

Antifreeze—MPR 170, Amendment 2: Reduces ceiling price on substitutes sold as antifreeze, effective February 1.

Construction Equipment — MPR 134, interpretation: Prohibits dealer or contractor from charging more than the rental for the machine plus transportation charges. Operating and maintenance service charges must be approved by OPA, issued January 27.

Defense Plant Corp.

Steel Drums—DPC issues purchase orders for 300,000 steel drums, 55-gal. capacity, 18-gage weight, for fuel oil and kerosene shipments in box cars.

Federal Agency Appointments

H. R. Gallagher, former president of Consolidated Oil Corp., and Shell Oil Co. Inc., of California, to director in charge of PAW district 5; B. C. Heacock, former chairman of the executive committee of Caterpillar Tractor Co., Peoria, Ill., to WPB deputy director general for distribution; W. R. Talbot, formerly sales and advertising manager for Westminister, Ltd., New York, to chief of WPB's General Salvage Branch; Robert M. Keeney, formerly industrial manager for Connecticut Light & Power Co., to deputy director of the WPB's General Industrial Equipment Division.

Special Priorities Are Assigned for 43.6 Per Cent of Rubber Capacity

by Henry D. Ralph

WASHINGTON, D. C.—Top priorities will be issued for immediate completion of approximately 43.6 per cent of the synthetic-rubber program, and the balance will have to come behind 100-octane refineries, escort vessels, and other urgent war construction programs, according to a decision attributed to James F. Byrnes, director of economic stabilization.

This decision is expected to end, for the time being, the controversy which has been raging in Washington for 2 months over the encroachment of other programs on the synthetic-rubber construction schedule laid down by the Baruch committee last fall. Rubber Director William M. Jeffers is said to be dissatisfied with the decision, but apparently it cannot be overruled except by President Roosevelt.

Full details were not immediately available, but it was understood the top priorities were granted in such a way that of the 43.6 per cent total, 41.9 per cent is for buna-S capacity, 1 per cent for neoprene, and 0.7 per cent for butyl rubber. It was also understood that the plans call for completions of larger percentages of the butadiene and styrene capacities than of copolymerization capacity. One report was that 55 per cent of the butadiene capacity and 63 per cent of the styrene facilities have been given top priority.

The remaining 56.4 per cent of the synthetic-rubber program continues "on the books" but without special priority assistance for the procurement of materials there is little prospect that it can proceed. However, simultaneous construction on all plants in the program was not contemplated from the outset.

Continues Fight With Military

Director Jeffers, previously outspoken in his dissatisfaction with the developments in priorities for synthetic-rubber plants, continued this week to take issue with the Army and Navy departments. The armed services insist that the 100-octane plants, escort vessels and other war requirements should take precedence over that portion of the rubber program earmarked for civilian relief.

"It seems to me," Mr. Jeffers declared before a House committee here February 1, "the job of the Army and Navy is to fight and not to run business and direct the civilian economy."

Donald M. Nelson, chairman of the WPB, explaining to the Gillette subcommittee, the conflict for equipment between the synthetic-rubber program and the construction of 100-octane plants, escort vessels, and other war projects. Paul E. Hadlick, committee counsel, is thumbing through a report while Sen. Allen J. Ellender of Louisiana conducts questioning

His remarks were made after Robert P. Patterson, under secretary of war, disclosed that the Army had suggested that the Government requisition 7,000,000 of the country's private automobiles, all spare tires on passenger cars and elimination of long-distance hauling of freight and passengers by trucks and buses. This suggestion, the witness said, was not accepted by the rubber director.

Mr. Jeffers told the committee that 14 months after Pearl Harbor not a single pound of synthetic rubber had been made in a government-controlled synthetic-rubber plant in this country.

The rubber director renewed his allegations of an "attempt to impede and eclipse the responsibilities" of his office through the so-called "expediters and inspectors" of the armed services.

Mr. Jeffers complained that there had been too little two-fisted direction of the rubber program. He said he was not sure that Mr. Nelson's views prevailed in explaining that final word on priorities rested in the WPB chairman's office.

"My own opinion is," declared Mr. Jeffers, "that Mr. Nelson is somewhat reluctant to make a decision that he doesn't think meets the views of the Army and Navy."

Mr. Patterson disclosed that the armed services had appealed to the White House when they believed Mr. Nelson was going to give "an exclusive top priority" to the synthetic-rubber program. He expressed the belief that such a priority would set back aviation-gasoline production, naval escort vessel construction and other important war programs. In this connection he reported the supply of aviation gasoline for 1943 "will not measure up to requirements" on the basis of latest estimates.

Mr. Nelson had made no final decision, Mr. Patterson recounted, but agreed to obtain the views of the White House. The decision was made by Mr. Byrnes, economic stabilization director, in the absence of President Roosevelt. Committee members then suggested that Mr. Byrnes be summoned to testify later this week.

Mr. Jeffers previously had demanded top priorities covering 65 to 70 per cent of the program, declaring

that goal should be met to avert a "catastrophe in military and industrial transportation. Later, he pared his figures to 55 per cent and, finally, to 49.5 per cent as the "irreducible minimum." The decision disclosed at the House committee hearings this week shows that Mr. Jeffers fell 6.2 per cent short of what he considered the minimum.

Facilities for production of 97,000 tons of synthetic rubber were given special priorities in December. Plants nearing completion will turn out about 145,000 tons and the facilities covered by the new directive will add about 215,000 tons—a total of 452,000 tons.

Easier East Coast Supply Situation Predicted

(Continued from Page 15)

tween consumption and requirements and indicated supplies occur in Districts 1, 2 and 3 as Districts 4 and 5 are in balance for the forecast period

Characteristic of the situation in these three districts is the pronounced lack of residual fuel oil in relation to demands, with a tendency towards overproduction of light products, particularly gasoline. This is especially noticeable in District 2 where, over the 7-week period, December 5 to January 23, gasoline stocks have increased at the rate of approximately 130,000 bbl. per day and on January 23 were about 4,500,000 bbl. higher than previous forecast as required for that date. Had yields been adjusted as previously recommended by this committee, the accumulation of gasoline could have been prevented and badly needed crude oil or fuel oils would have been made available for shipment to District 1. As a result, East Coast supplies could have been increased by approximately one-third of this excess gasoline accumulation or by about 1,500,000 bbl., equivalent to about 30,000 bbl. per day over the 7-week period, by virtue of supplies having been provided at nearer points than District 3 for tank-car movement to District 1.

Yield Adjustments Vital

The failure in general to make the necessary yield changes in advance has been partly responsible for the necessity of the imposition by the PAW of the prohibition of motor-gasoline shipments by tank cars into District 1 and has greatly added to the difficulty of conforming to the order.

The main deterrent to the making of the required yield changes has been the failure to provide the necessary price adjustments. The recent adjustments by the OPA of residual fuel-oil price ceilings on an A.P.I. gravity premium basis in certain areas is a step in the right direction but conditions in other areas will have to be taken into account if the over-all situation is to be adequately corrected.

The gravity-premium method is an effective incentive for individual compensation for increased fuel-oil production and it should be further utilized to stimulate production where needed. However, to avoid inequities among customers, some arrangement should be made for a uniform average price to them, with reallocation of part of this price to suppliers, dependent upon the gravity supplied.

The other noteworthy lack of balance occurring in the three districts is the maladjustment of refinery runs and yields as among the districts which is resulting in interference with the maximum output of essential war products. This situation is reflected in current failure to attain the maximum output of war products in Districts 1 and 3. In District 1, this is due to insufficient crude supplies while in District 3 it is due to lack of transportation for nonwar products and the filling of storage facilities.

If this unbalanced program is continued, the requisite reduction in crude runs for the three districts as a whole, necessitated by limitations in consumption and inadequate transportation, will fall primarily on Districts 1 and 2. One possibility for relief is the reduction of refinery runs in District 2 with a resulting shift from product to crude shipments to District 1, thereby providing additional product outlet to refineries in Districts 1 and 3.

Amended P-98-c Validates Transfers of Equipment

WASHINGTON, D. C.—Transfers of inventory stock of materials from one branch of an oil company to another branch of the same company are permissible according to the terms of an amendment of Preference Rating Order P-98-c, announced January 30 by the War Production Board, upon the recommendation of the Petroleum Administration for War.

An oil industry operator can sell to another oil operator any material he has in stock without obtaining priority permission from the War Production Board.

LETTERS:

Disagrees With Estimates on Petroleum Reserves

Dallas, Tex.
Dear Sirs:

I have just read with interest the article by W. V. Howard, field editor, in the January 28 issue and, while I do not by any means question Mr. Howard's sincerity, the fact remains that we have all depended too much upon paper statistical data, which have, over the last 25 or 30 years, proven themselves to be hypothetical and at times synthetic.

If these old pools of Texas, Louisiana and Oklahoma were called upon in an emergency to produce their capacity, it would be the greatest shock to the statistical artists of the oil industry imaginable. Take the old East Texas field—one of the largest sources of supply that the statistician has to use as an example of reserve—and here we are pumping salt water into the field to try to squeeze the crude out, and if we would increase the allowable of the East Texas field for 30 days any appreciable amount, the bottom-hole pressure would drop so fast the pale would come to the cheeks of those who have, over recent years, been telling us how many million barrels of reserve the East Texas oil fields could be depended upon.

The statisticians upon whom the petroleum industry authorities are depending, had better get away from their paper desk figures and get down to the field realities that would, in the writer's opinion, cause a 50 per cent cut in all of the estimates of oil reserves in the nation.

This nation should be shaken from coast to coast with the reality of petroleum's necessity in winning this great world conflict.

I am shocked beyond expression to realize the slowness of Washington in realizing the importance of a very substantial increase in the price of crude oil, to make it possible for the oil operators to survive and pay taxes to continue this war and, in the second instance, to be able, through mediums of exploration, to find in 1943 new reserves upon which our Army and Navy may depend. We haven't got the oil, and there isn't any use of further kidding ourselves, and it is my earnest hope that those who have, over the last 25 or 30 years, explored and created the oil pools we now possess, will be given the financial encouragement that they may patriotically go out in the line of endeavor that they are trained for and create the supply which it will soon be realized is absolutely and imperatively needed.

Sincerely,
HARRY HINES.

State Capitals

OKLAHOMA

REPRESENTATIVES of the Mid-Continent Oil and Gas Association, other trade associations and of the industry in general attended a conference in Oklahoma City February 2 for the purpose of discussing a proposed bill to stimulate secondary-recovery operations.

Members of the various committees which have been working for several months on the new proposed bill represent all sections of the state and all divisions of the producing branch of the industry.

Oklahoma producers are attempting to introduce legislation that would enable them to practice secondary recovery without gaining consent of all minority royalty owners, a prerequisite under present laws that has retarded this operation.

TEXAS

DATE of the next state-wide proration hearing is February 18 at Fort Worth, it was announced last week by Beauford Jester, chairman. The Railroad Commission is continuing its policy instituted in January of conducting state-wide hearings in cities other than Austin during the legislative session because of transportation and hotel conditions.

A "POOLING BILL" to permit the operation of small leases under one management has been drafted and is ready for introduction in the House by Representatives Clark of Breckenridge and McAlister of Fort Worth. Shortage of materials for drilling wells is given as the reason for introduction of the bill, as the government regulations call for one well to 40 acres, and permit from the petroleum administrator's office in exception to this rule is often difficult to get.

A BILL to prorate condensates and natural gasoline in proportion to the restrictions on crude oil was introduced in the House by Representative Favors of Pampa. Production of condensates and natural gasoline in Texas averages approximately 112,000 bbl. daily. The bill proposes that these products be prorated according to market demand, as crude oil is, equalizing the transportation differences between condensates and crude.

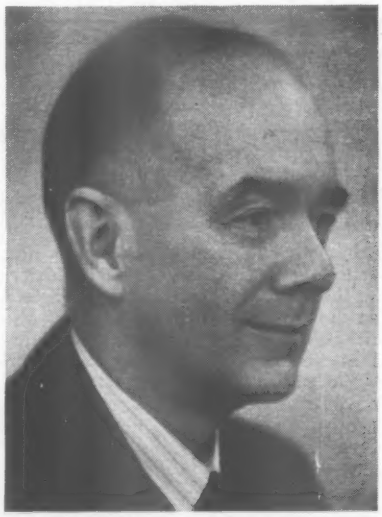
Shutdown days for the Wasson pool of Yoakum and Gaines counties was increased last week from 10 to 13 days in special orders of the Railroad Commission. The Old Ocean pool of Brazoria County was allowed to produce 24 days out of the month of February instead of 10 days, as provided in the original order. Humble Oil & Refining Co. and the Petroleum Administration for War petitioned the commission to increase producing days at Old Ocean to provide special crude needed in manufacture of war products.

ARKANSAS

APPLICATION of the Oil and Gas Commission for an exception to Conservation Order M-68, permitting development of the Texarkana gas-condensate pool in Miller County, Arkansas, on a basis of one well to each 160 surface acres has been denied by the Petroleum Administration for War.

In a communication received last week by O. C. Bailey, chairman of the commission, Robert E. Allen, assistant deputy petroleum administrator, advised that the application had been rejected because "there is no outlet at present for the gas as such and because of the necessity to minimize the expenditure of critical material."

The Arkansas commission was invited to resubmit the application if additional data or altered circumstances justify.



DANIEL J. JONES, state geologist of Kentucky, is that state's representative on the Research and Coordinating Committee of the Interstate Oil Compact Commission. He was born in Chenango County, New York, in 1889. He received his B.S. and M.S. degrees at Syracuse University in 1913 and 1915. Between 1914 and 1917 he was instructor in geology at the University of Texas. He is a member of the American Association of Petroleum Geologists, and was formerly geologist with the Eastern Gulf Oil Co. During the past 8 years he has been state geologist of Kentucky at Lexington. He has been active in assisting Kentucky oil operators and has prepared a number of short bulletins, magazine, and newspaper articles dealing mainly with petroleum geology and petroleum industries. In 1942 he gave a series of radio talks under the title of "Kentucky's Mineral Wealth"

KANSAS

HIGHEST allowable in the state's oil history, a maximum of 310,500 bbl. daily, has been assigned for February. The allowable is the same as the PAW quota.

CMP Inventory Forms Mailed to 30,000 PRP Units

WASHINGTON, D. C.—The War Production Board last week completed mailing Controlled Materials Plan inventory report forms to the more than 30,000 PRP units, many of which will begin operations under CMP on April 1, when the new plan goes into effect.

The form, CMP-7, calls for a report of shipments during the last quarter of 1942 and statements of inventories of aluminum, copper, steel and other materials on the CMP list, on hand December 31. The completed forms must be returned to WPB by February 22.

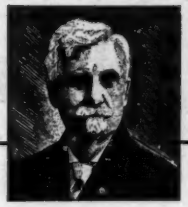
Reports of shipments during the last quarter of 1942 are to be broken down by quantity, value and procurement agency, and must show quantities and types of listed materials entering into the finished product.

The inventory schedule must show materials put into production during October, November and December, and inventories, both usable and non-usable, on hand the last day of the year. In addition, the schedule calls for an estimate of usable inventory which it is expected will be in the possession of the manufacturer on March 31, 1943. "Usable inventory" means materials available for use in current production.

If a manufacturer's inventory of the listed materials on December 31 was less in all categories than the minimum amounts which must be reported, he should file the return, stating the case, but is not required to fill in the inventory and shipment schedules.

the OIL AND GAS JOURNAL

PRODUCTION - TRANSPORTATION
REFINING - NATURAL GASOLINE



Founded in 1910 by
PATRICK C. BOYLE

OPA Price Decision a Challenge

THE OPA, pointing to the latest U. S. Tariff Commission reports, says there is no justification for a general advance in crude-price schedules. It suggests the application of selective advances in fields and areas where the commission found prices below the cost of production.

No one will quarrel with the Tariff Commission's findings so far as they go. The commission established certain rules of accounting in determining the cost data and that procedure was followed in compiling the information on which its report to the pricing agency was based.

But that does not alter the fact that the investigation and conclusions as interpreted by OPA are incomplete and exceedingly dangerous, not only to the petroleum industry but also to all business enterprises due to the precedent established. In no sense is the report a comprehensive guide, pricewise, to what has to be done in the matter of returns to oil operators in order that they will find and produce the billions of barrels of oil required over the next few years.

An investigation of costs in other activities would find conditions similar to those reported for oil production by the Tariff Commission. Take for example the agricultural situation. A survey in 1941 or earlier would have shown that the farmer's costs were under the prevailing markets with as great a variation in costs as those reported in several hundred oil fields.

But nobody suggested that farm products be advanced selectively, which would have meant the application of literally tens of thousands of varying schedules. On the contrary, prices until recently were permitted to advance normally so that based on the latest government wholesale indexes, farm prices are 22 per cent higher than they were a year ago and 81 per cent higher than they were in August 1939, at the start of the war.

Government subsidies to those with the highest costs will add comparatively little to output and will destroy the economic balance in operations as essential in the future as it has been in the past and if carried through to the final application, will end in complete government control, not only of price but also of operations. In crude production, price has always been the incentive which brought increased output when and where it was needed.

Right now producers of crude oil need returns from their operations in line with 1943 costs including taxes and all the other difficulties of wartime operations. Prices should not be based on studies made of field production costs but in the light of the modest net incomes of the industry as a whole over a period of years.

Today's financial returns, of particular importance to the independent elements of the industry, should also take into consideration what has to be done in exploration to reverse the trend in which far more oil is being produced and consumed than is being found. Coming responsibilities should mean greater revenue to the entire petroleum industry, the only guarantee of adequate supplies for the future. Increased costs to petroleum users would be of minor significance.

OPA's decision is the most serious challenge that has come from Washington so far, with the final action determining whether or not the petroleum industry succumbs to bureaucratic control or continues as a free enterprise.

Government's New Pipe-Line Projects Have Industry-Wide Significance

by Paul Reed

In addition to the 24-in. crude line from Texas, the East Coast supply situation demands two unusual projects serving Texas refineries: a 20-in. northeastward products carrier and conversion of a natural-gas line for moving crude and fuel oil.

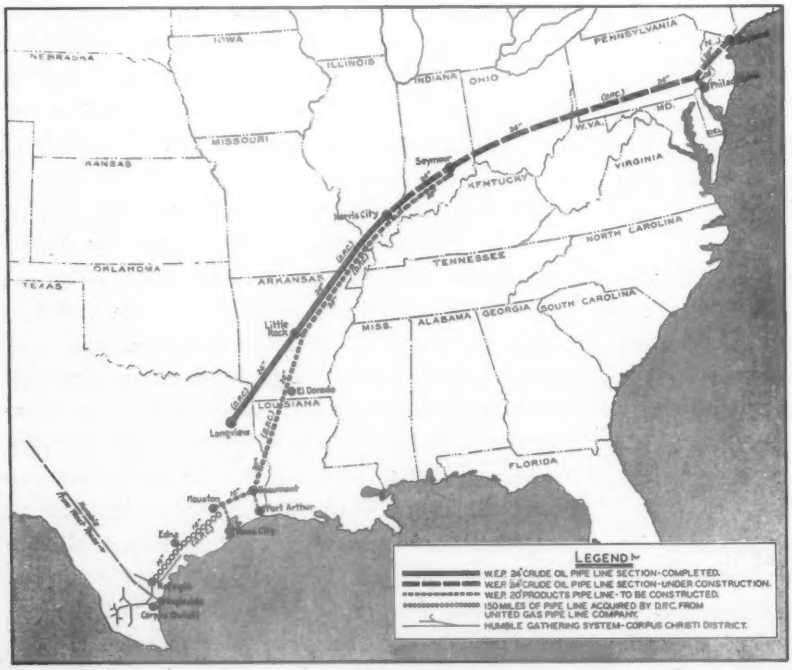
FOLLOWING recent announcements of two unusually important pipeline programs there has been much discussion of the manner in which they will be carried out and their effect on the oil industry. One of these new projects is the 836-mile 20-in. products line to be built by War Emergency Pipelines, Inc., for Defense Plant Corp. from Beaumont, Tex., to Seymour, Ind. The other is the conversion of a natural-gas line for moving crude and heating oil from Corpus Christi, Tex., to the Houston refining area. Likewise, this is a DPC project with Humble Pipe Line Co. acting as agent in charge of engineering and construction.

WPB approval for the WEP 20-in. products line to cost $44,000,000 has been received as a matter of course at this time when the industry has not yet had opportunity to comprehend the full significance of the WEP 24-in. line now under construction for taking Texas crude oil to the East Coast. Under other circumstances the 20-in. products line would be sensational.

The first station on the 20-in. products line will be at Beaumont, Tex. Eighty-three miles of 16-in. pipe will be laid as a feeder from Houston to Beaumont and 32 miles of 10¾-in. pipe will be laid as another feeder line from Port Arthur to Beaumont. Thirty-four miles of second-hand 8⅝-in. pipe will be laid as refinery tie-ins near Baytown and Texas City. For the pipe, 164,000 tons of new steel will be required.

The 20-in. products line with ⅛-in. wall thickness will extend almost in a straight line from Beaumont to the Little Rock, Ark., station on the WEP 24-in. crude-oil line. The products line will pass within a couple of miles of El Dorado, Ark., but no connection will be made with refineries there in the immediate future.

From Little Rock, the 20-in. line will be laid parallel to the 24-in. line at a distance of about 25 or 30 ft. The right-of-way for the 24-in. was originally cleared for a width of 100 ft. for a large part of its route. Plans call for installation of pumping equipment at 15 points. A typical installation will consist of three centrifugal pumps, each driven by a 1,250-hp. electric motor, totaling 3,750 hp. per installation. Pumping equipment will be designed according to principles followed in building the 1,500-hp. units for the 24-in. line.



How two newest projects fit into East Coast supply picture

Six New Stations

Starting with the one at Beaumont, six new stations will be built between the Gulf Coast and Little Rock. From Little Rock, Ark., to Norris City, Ill., the pump stations of the 24-in., having three units for a standard station, will be extended to provide for the three additional units of the 20-in. products line. At present only one station is contemplated between Norris City and Seymour, Ind. There will be a total of 44 pumping units with motors capable of producing 55,000 hp. for the 20-in. system. Operating pressure will be similar to that of the 24-in. which is not expected to exceed 750 lb. under ordinary conditions.

As a result, it is expected that the 20-in. line will have capacity for delivering 235,000 bbl. per day at Seymour, Ind. This will make it possible to increase the movement of products to the East Coast by 110,000 bbl. per day. There has been a misunderstanding by the general public regarding the difference between these two figures. It may be readily recognized that the increase is accom-

plished by making tank cars more effective when operating eastward over the shorter route from Seymour, Ind.

But why have a terminal at Seymour, Ind.? That is the great mystery in the minds of pipe-line men throughout the industry today. Terminal facilities at Seymour will cost about $1,500,000. To a large extent they will duplicate facilities installed at Norris City, Ill., for loading tank cars from the 24-in. line while it is being extended eastward. The 24-in. line is due for completion to the New York-Philadelphia areas in June of this year. The 20-in. products line is scheduled for completion in August. When the 24-in. extension is completed, Norris City tank-car facilities could be used for products from the new 20-in. system. When consideration is given to the expense, difficulties and delays incident to building tanks and other terminal equipment under present conditions, it appears doubtful whether the cost in time and money will justify the Seymour terminal which will be only about 160 miles east of Norris City.

There is a possibility that the 20-in. products line may be laid bare in order to expedite laying operations.

Work to Start in April

Laying of pipe for the 20-in. line may start in April. To do this six or seven contractor organizations not now engaged in laying the eastward extension of the 24-in. may begin on the feeder lines and main line between Houston, Tex., and Norris City, Ill. As soon as contractors now working on the eastward extension complete the laying of the 24-in. it is likely that they will lay 20-in. along sections of the route where they are now engaged. Although authorization has been given for laying the 20-in. only as far east as Seymour, Ind., it is stated that a decision will be reached in May as to whether it will be extended to the East Coast. Chances are that it will be so extended.

From active opposition to the 24-in. project early in 1942, the Army and Navy have swung over to full support both of the 24-in. and 20-in. projects. In fact it appears that they will need the entire capacity of both lines to fill their needs. After the two big lines are completed, indications are that the East Coast civilian population will have to depend on what tank cars are still in service plus the present pipe lines to the East now being expanded which are not included in the WEP "big inch" projects.

The marked contrast between the months required for getting approval of the 24-in. line and the few weeks for clearing the way for the 20-in. can be explained by this change in attitude of military authorities as well as by the fact that the critical war situation made it possible to tell certain interests chronically opposing pipe lines of all kinds, at all times, and anywhere to step aside. In the central states traversed by the WEP route, some oil-industry organizations, which have felt uneasy about the peacetime effect of the WEP products line, have been assured that if the line is operated according to business principles the system should have no effect whatever because it would not be sound to make deliveries in the central states which would leave unused part of the capacity of the line to the eastward.

Alternate Supply System

Negotiations which started last summer recently resulted in final arrangements for an additional pipeline system for bringing sweet crude from the Corpus Christi area to Houston, Tex. To make this possible, United Gas Pipe Line Co. has sold 150 miles of 14-in. and 16-in. pipe which was laid about 15 years ago between Refugio and Houston, Tex. Later this was looped with 18-in. for all of the distance except for a gap of a few miles. United is retaining the 18-in. loops; the gap will be filled in to make a continuous line for transmitting natural gas.

This gas-line-conversion project becomes necessary because the WEP 24-in. line will divert movements of sweet oil from East Texas to Atlantic seaboard refineries which formerly went to Gulf Coast plants. In addition to supplying sweet crude to Gulf Coast refineries, the new system is supposed to put some sweet crude into the WEP 24-in. line. But so great is the demand of Gulf Coast refiners for sweet crude that there is doubt whether the amount available for WEP will be substantial unless Petroleum Administrator Ickes definitely insists.

When in operation the Corpus Christi-Houston line will move about 50,000 bbl. of crude and 25,000 bbl. of No. 2 heating oil. It is unlikely that the system will move West Texas crude as there are ample facilities in other lines for such traffic.

So far no name has been given to the undertaking which is the first important project utilizing a natural-gas line for moving petroleum east of the Rocky Mountains. Construction of five stations and a 15-mile extension from Pierce Junction to the Galena tank farm of Sinclair is expected to start soon.

Additional facilities for moving Corpus Christi crude have been completed by other companies within recent weeks. Sinclair interests built an 8-in. line from Corpus Christi to one of its lines at Damon Mound, Tex. Magnolia Pipe Line Co. laid a line from Vanderbilt to Placedo, Tex., to connect with the Barnsdall system so as to increase movement of Corpus Christi sweet crude to its refinery at Beaumont, Tex.

Line Must Compete for Critical War Materials

WASHINGTON, D. C. — The new 20-in. products pipe line from Beaumont, Tex., to Seymour, Ind., must compete for materials with many other urgently needed war projects and completion by early September appears doubtful.

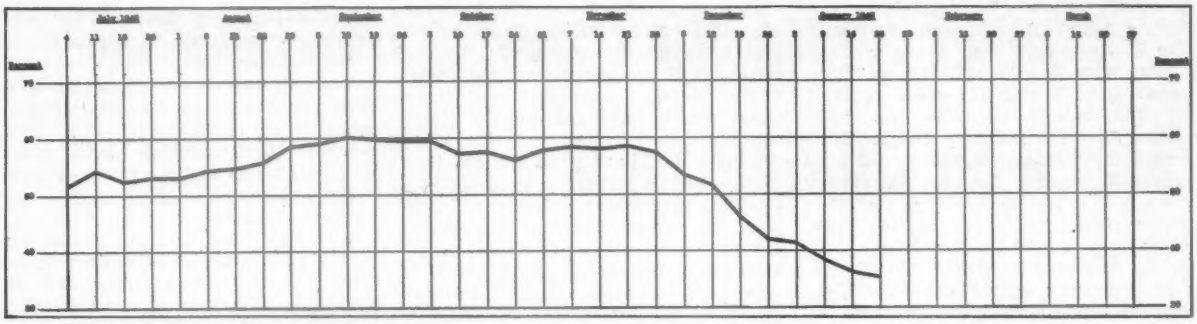
Although the War Production Board has approved the project, an allocation for steel probably will be included in fabricating schedules for the second quarter of the year. Much of the pipe may have to wait completion of rolling the 24-in. pipe for extension of the crude line from Norris City, Ill., to New York and Philadelphia, and some construction crews may have to complete the "big inch" before work on the new line can reach its peak. Fabrication of the valves, motors, and pumps may also have to take its turn behind work on other war projects.

The 20-in. line will carry anything except crude and heavy fuel oil, including light heating oils, kerosene, and probably several grades of gasoline, possibly including aviation motor fuel or base stock. Its chief purpose is to drain off accumulations of refinery products from war products refineries in the Gulf Coast area, and therefore it will not necessarily mean an increased demand in that area for West Texas crudes. It is expected that the Army and Navy will use a considerable percentage of the products delivered through the new line, but there are no plans for advance allocations of products and operation of the line should reduce the threat of severe curtailment next winter.

From a point in the vicinity of Beaumont to Seymour, Ind., the line will require 836 miles of 20 in. o.d. $\frac{1}{4}$-in. wall pipe, either seamless or electric welded depending on what mills are available. Small lines will connect with various refineries in the Port Arthur and Baytown areas. For feeder and connecting lines the project calls for approximately 83 miles of 16-in. o.d. $\frac{1}{4}$-in. wall pipe and 32 miles of 10¾-in. o.d. 9/32-in. wall pipe, and 18 miles of spiral road crossing pipe. Some second-hand materials will be used, including 34 miles of 8⅝-in. pipe for feeder.

Plans call for 15 pumping stations, including one at Norris City and a booster station near Seymour. This arrangement will require 44 motors and 44 pumps of 12 by 16-in. delivering 235,000 bbl. per day at 250 lb. Motors will be of 1,250 hp., squirrel-cage type. Also 16 transformers of 3,750 and 2,500 kva. Also 51 tanks, mostly of used materials, and an indeterminate number of valves of 12, 16, and 20 in. Pumping stations will be approximately 55 miles apart.

Contracts for pipe, materials, and laying have not yet been awarded so it cannot be predicted when construction will start or be completed.



Availability of petroleum products for civilian use on the East Coast expressed in terms of percentage of 1940-41 normal stocks

New Supply Index Shows Steady Deterioration in East

NEW YORK.—For the first time since April 11, 1942, when the American Petroleum Institute statistics on East Coast gasoline and fuel-oil stocks were last published, authoritative weekly figures on the availability of petroleum products on that area have been released. These figures, prepared by the A.P.I.'s Department of Statistics, show the current availability of petroleum products for civilian use in relation to the "normal" stocks of the year 1940-41. They reveal the very critical condition of the East Coast supply situation as of January 23 when the stocks available for civilian consumption were only 35.3 per cent of those on hand as of the corresponding date 2 years ago.

The Institute's weekly report on production and stocks of refined products was revised last April to exclude information that could be regarded as of "aid or comfort to the enemy." At the same time, however, this revision removed the only generally accepted and readily available up-to-date source of information on East Coast stocks. In the ensuing 10 months, conflicting statements issued from various quarters resulted in confusion as to the exact status of the East Coast oil supply. In order to end this confusion and to provide the consuming public with a barometer of conditions as they are, the Institute devised this method which has been approved by PAW.

An index figure will be published weekly by the Institute. It will represent the volume of oil available for East Coast civilian consumption today in comparison with the volume available 2 years ago, the last "normal" year. Since stocks of aviation gasoline and all government-owned stocks are excluded it will have no value as military information. Oil in pipe lines and tank bottoms, physically unavailable, is also excluded so that only oil actually available for civilian consumption is considered.

This index number will be sensitive to variations from normal and if it shows a steady gain or loss it will indicate that the outlook is gradually improving or deteriorating. Normally East Coast stocks decline in the fall and winter and rise in the spring and summer. In order to return to normal the now very low East Coast stocks should rise abnormally fast this spring and summer. If this trend develops it will be indicated by a rising index number whereas if the increase is less than normal or if the decrease continues, the index number will continue to decline.

Explanation of Chart

In interpreting the chart the Institute states:

"It should be kept in mind that when this percentage falls below 50 it means a serious condition of shortage and if it falls below 40 there are bound to be some localities in which some products are not available in quantities sufficient to meet local demands."

Index numbers from July 4, 1942, to the present are shown in the accompanying table. While the situation has been serious throughout the period covered, the marked decline in the past 10 weeks indicates how rapidly it has deteriorated in 2½ months.

July 4, 1942	51.7
July 11	54.3
July 18	52.6
July 25	53.1
Aug. 1	53.1
Aug. 8	54.5
Aug. 15	54.8
Aug. 22	55.9
Aug. 29	58.7
Sept. 5	59.1
Sept. 12	60.1
Sept. 19	59.8
Sept. 26	59.6
Oct. 3	59.6
Oct. 10	57.3
Oct. 17	57.5
Oct. 24	56.1
Oct. 31	57.9
Nov. 7	58.3
Nov. 14	58.0
Nov. 21	58.5
Nov. 28	57.3
Dec. 5	53.3
Dec. 12	51.7
Dec. 19	46.0
Dec. 26	42.0
Jan. 2, 1943	41.2
Jan. 9	38.4
Jan. 15	36.3
Jan. 23	35.3

Two Standard of Indiana Refinery Men Promoted

CHICAGO, Ill.—Dr. M. G. Paulus, vice president in charge of manufacturing for Standard Oil Co. (Indiana), announced here February 1 the promotion of two Whiting refinery executives to positions as assistant general superintendents. They are Dr. A. S. Musselman, who has been superintendent of the heavy oils department, and Dr. G. F. Ordeman, who has been superintendent of the light oils department. F. V. Grimm will take Dr. Musselman's place as head of heavy oils and Arthur F. Endres will move up in the light oils.

Dr. Musselman began work for Standard of Indiana in 1917 as a research chemist at Whiting 2 years after taking a Ph.D. at Johns Hopkins. In 1922 he was transferred to operations work.

Dr. Ordeman started work at Whiting in 1919 as a research chemist after taking his Ph.D. at Johns Hopkins, teaching at Washington and Lee University and serving in World War 1. He took up supervisory duties in 1923 and has since moved up through positions in the asphalt and acid department and the light oils. At various times he has been head of the Standard Oil Athletic Association and the Foreman's Fellowship Club.

Rise of 37 to 50 Cents Asked in Oil-Price Formula

LOS ANGELES, Calif. — Ceiling prices for crude oils in California must be advanced by at least 50 cents a barrel if the state is to continue to meet present wartime demands and anticipated needs over the first half of 1943, Reese H. Taylor, president, Union Oil Co. of California, declared here last week in discussing changed conditions in the California oil industry brought about by the first year of war.

The higher price ceiling is an immediate necessity, but must also be accompanied by the promised relaxation of present restrictive controls on drilling and development so the industry may effectively employ its available equipment and remaining experienced manpower in field operations, Mr. Taylor said.

REESE H. TAYLOR

Mr. Taylor said he had forwarded to the petroleum administrator for war early this month a recommendation calling for an upward revision in crude-oil ceiling prices. The formula submitted to PAW would increase the ceiling price of 27-gravity Signal Hill crude 37 cents a barrel to $1.52, and would call for a maximum increase of 50 cents for 15-gravity Mount Poso field crude to $1.23 a barrel. Proportionate ceiling price changes would apply under the formula to other fields and other gravities depending on the character of the crude. That is to say, like gravities in different fields might not necessarily be increased in the same amount, as the increase would be greater to those crudes from which the largest percentage of desired products are obtainable.

The largest increase would apply to heavy crudes, which would tend to stimulate production of those oils from which high percentage of fuel, diesel oil and gas oil are obtainable and for which the war has created abnormal demand.

An increase of 50 cents a barrel in the heavy-crude price ceiling, with recognition of recent increases in refining and marketing expenses, would necessitate increasing the base refinery price ceiling of fuel oils, gas oils and asphalts (product categories in which greatest shortages have appeared) by approximately 68 cents a barrel with relative increase in the ceiling prices of all crude oils proportional to the quantity of such products obtainable from various grades of petroleum.

A higher ceiling price for crude oil must insure that there will be no incentive to any refiner to continue the purchase of a particular crude and substitute another, as it is essential that the amount realized by the industry from increased ceiling prices for products shall be reflected proportionately in the ceiling prices of all crudes from which such products are obtained, Mr. Taylor suggested.

Penn Grade Association Appoints Pratt New General Secretary

OIL CITY, Pa.—The post of general secretary of the Pennsylvania Grade Crude Oil Association was filled last week by promotion of Samuel F. Pratt, formerly assistant manager, to fill the vacancy caused by the death last August of J. E. Moorhead.

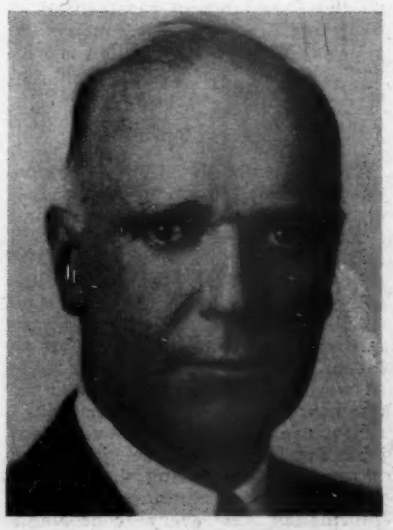
Directors of the association also appointed W. W. Dunlap, publicity director and editor of the Penn Grade Bulletin, assistant secretary.

The new general secretary was born in Titusville, Pa., but grew to manhood in Oil City. He joined the Penn Grade association 10 years ago as field representative in St. Louis and Philadelphia. Later he was made manager of the field-service division and then spent 3 years in Europe as European manager. He returned to Oil City at the outbreak of World War 2 and was made assistant manager of the association at that time.

Mr. Pratt graduated from Oil City public schools and Carnegie Institute of Technology. Then, he served as district manager for the Fruit Growers Express at several eastern cities and later as business manager of a tile company of Franklin, Pa.

Mr. Dunlap has been in the employ of the Penn Grade association for 8 years. He is a former newspaper man and came to Oil City from Penn State College, where he was director of sports publicity and a member of the staff of the college news bureau. Previous to his service at Penn State he worked for Minnesota newspapers. Since joining the association staff as publicity director in 1934, Mr. Dunlap has been in charge of the organization's sales-promotion activities and has worked with producers.

S. F. PRATT



W. W. DUNLAP

Nation Pulled a Rip Van Winkle In South American Affairs

AS a nation we pulled a Rip Van Winkle and have been a long time awakening to the fact that the Western Hemisphere must be viewed as a unit," Ruth Sheldon Knowles, traveler and writer, declared at the annual dinner of the Tulsa chapter of Nomads, January 28, at Tulsa. Mrs. Knowles spent several months in South America during 1941 as the personal representative of Harold L. Ickes, secretary of the interior, at that time petroleum coordinator and now petroleum administrator for war. She visited all the oil fields and refineries of South America and the Netherlands West Indies at that time and during the past year has been connected with the Washington headquarters of the PAW. Mrs. Knowles in her Tulsa talk said in part:

"Whenever you meet another American any place in South America today a pretty safe question to ask him is: 'What department of the government do you represent?' He might be a Department of Agriculture expert making a survey of Ecuador—a Bureau of Mines engineer finding out about an asbestos deposit in Venezuela—a Rubber Reserve official working out the problem of obtaining latex, in Colombia or Brazil—a Board of Economic Warfare man checking the tin situation in Bolivia—a FBI man finding out about subversive enemy activities in Argentina—or a representative of the Office of Coordinator of Inter-American Affairs on any one of a myriad activities. In Washington they are laughingly referred to as 'the Rover Boys.' With all these government representatives swarming around South America on your tax money, the question is why and what are you going to get out of it?

Pioneering Job to Do

"We have finally realized that we have a pioneering job on our hands—one to challenge all our ingenuity and resources and one by which North and South America will mutually profit tremendously, not only politically by achieving a politically and spiritually united Western Hemisphere, but economically. There are no blueprints for the job we have to do so we have to feel our way and we are bound to make mistakes but I can assure you that the Government is doing a remarkable job. The 'Rover Boys' are doing the groundwork—they are gathering the needed information on every conceivable subject and paving the way to real understanding between the Americas. North and South America must be educated to each other and it is a tremendous task for we are totally different. Your tax money is being spent on that process of education and wisely spent. It will be returned a thousandfold by the security and development of the Western Hemisphere as a whole.

"One thing we must understand is that the only real dominant ism in South America is South Americanism. Business can't be done in the old Yankee imperialistic way. South America can use our capital and technical talent but it won't tolerate our hogging the profits. How to do business properly in South America is one of the principal phases our Government is concentrating on. Special economic advisers have been attached to all our embassies to help guide American business men not only on how to do things but what to do. Even during wartime we are starting new enterprises by transfering idle machinery and factories in the United States to South America where they are needed.

"The U. S. Government is making surveys to open up the great inland waterways of South America for development which after the war will be one of the most spectacular in the whole world. We are helping South America build highways, establish more airlines, increase water works, work out educational programs, increase agricultural production. In fact, having reached our own manhood we are helping South America in its adolescence to attain the stature we have. And we are building this on a solid foundation of understanding and respect."

PIWC Hears Report on Failure of Discoveries to Equal Production

WASHINGTON, D. C.—An unusually long and important list of committee reports was on the agenda as the PIWC opened its February meeting in Washington February 2. Chief interest was in an exhaustive and detailed report of the committee on cost and price adjustment and while this was discussed at length its contents was not made public immediately.

New committees reporting for the first time were those on manpower, effect of government restrictions on lease obligations, program for post-war adjustment, publication of East Coast statistics, tone-down painting of refineries and on drum shipments.

At the opening session, the council met with Chairman Geoffrey Lloyd and other members of the British Petroleum Mission to exchange views on problems of government-industry relations and regulation of the petroleum trade.

The committee on production submitted a detailed survey of drilling and production in 1942, including reports from PAW directors of production and reserves. The latter showed that proven reserves of new oil fields and horizons discovered and developed in 1942 are estimated at only 178,000,000 bbl. If to these reserves are added the estimated proven but undeveloped reserves in these fields and horizons the proved reserves reach a total of 421,000,000 bbl., but these new discoveries may ultimately reach a possible maximum of 800,000,000 bbl. These proven discoveries were only about 30 per cent of 1942 production, but their possible maximum would be about 58 per cent. The number of new fields found in 1942 was reported as 261, compared with 342 found in 1941, and their proven reserves averaged 1,600,000 bbl. per field with possible maximum of about 3,000,000 bbl. per field. The report revealed that the PAW Division of Reserves is making a study of the cost of exploration in the petroleum industry.

Washington Bulletins

The Bureau of Mines forecast for February is 3,914,300 bbl. daily of domestic crude to meet market demand, or 4 per cent above actual in February 1942. Motor gasoline demand is estimated at 39,700,000 bbl. in February, or 11 per cent below actual a year ago.

PAW also amended Petroleum Administrative Order 1 to improve distribution to consumers by directing suppliers to apportion deliveries among customers served regularly during 1942 after giving preference to the Army and Navy.

PAW has extended until April 1, unless earlier revoked Petroleum Administrative Order 2, formerly known as M-68-5, permitting special well-spacing rules in Illinois and adjacent territory.

Oil-Products Containers Remain a Problem

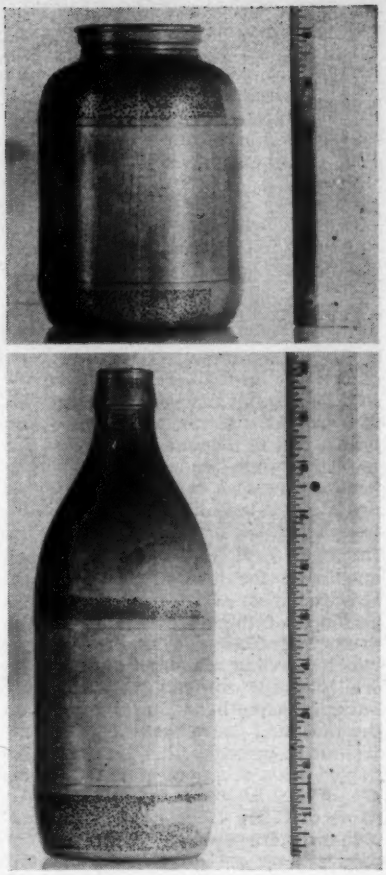
by J. P. O'Donnell

WHILE a large variety of containers has been offered to the oil industry to replace the metal cans and drums normally used, none has been developed that yet receives the same widespread acceptance in the industry. Some substitute containers have been found acceptable for specific products but frequently the production capacity is unequal to the industry's demand. In most instances, however, the substitutes have proven impractical for a variety of reasons including their failure to meet basic tests, the need for installing new and hard-to-obtain filling and capping machinery and the exorbitant cost involved in their use.

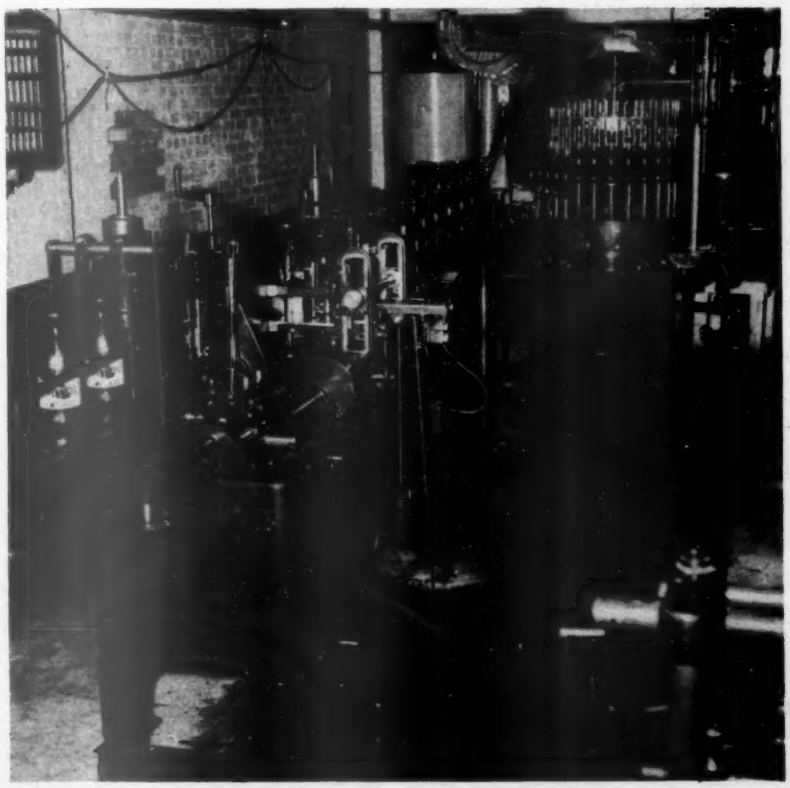
Alternate containers have been adopted by the industry on a wide scale only for solid or semisolid products such as asphalt, wax, grease and petrolatum. Substitute containers for liquid products have been adopted by only a few companies. Glass bottles and fiber cans are being used to some extent by manufacturers of lubricating oils and converted whiskey barrels are being used for liquid products including lubricating oils.

Many package-supply companies are working on the oil-container problem. One has produced a lined, quart-size, fiber can with a double closure which, in the opinion of some oil men, may prove successful. This container has successfully passed tests and may be handled by existing filling equipment but is not yet in large-scale production. Among other proposed substitutes is a conical shaped container, both strong and leakproof but incapable of being filled by existing machinery.

Some of the package-manufacturing companies believe that containers with which they are now experimenting will prove satisfactory and, for this reason, new developments may be expected. Others feel that because of the uncertainty of future demand and present ability to obtain material it is inadvisable to enter this field.



Above: Wooden models of wide-mouth and narrow-neck glass containers proposed for packaging motor oils. Left: This equipment fills, caps, and labels quart bottles of motor oil at one of the Pennsylvania refineries



Substitutes for metal containers are not entirely a war development in the oil industry but their use has never been as common as at present. Paper bags for asphalt were developed by one company in cooperation with a manufacturer and were in use more than 5 years ago. These were four-ply bags with a capacity of 100 lb. Today one manufacturer making bags for asphalt recommends a similar four-ply package with an inner ply of 50-lb. bentonite-coated kraft paper, two plies of 50-lb. natural-kraft paper and an outer ply of 50-lb. all-weather kraft paper. The bentonite prevents penetration by the asphalt and adhesion to the container.

Fiber drums are also being used for products which are poured molten and solidify on cooling. One package supplier is manufacturing drums in 40 and 55 gal. capacities of 100 per cent kraft fiber board. These drums

have been filled with asphalt at temperatures ranging from 250° to 500° F. They are lined to prevent the contents from adhering to the walls. These drums have bonded, sewed seams and after the contents, which may be asphalt or paraffin, solidify they may be removed by pulling the top, bottom and body seams. These drums have a wire locked closure.

One oil company which has been using this fiber container for 8 months has its own stitching machinery. This permits it to buy the containers unstitched and they are shipped flat with 30,000 100-lb. containers to a carload. This company also used fiber drums for asphalt ranging from 50 to 55 gal. in capacity. The variable size permits nesting of empty drums which can be loaded as many as 350 to 400 double-head and 800 single-head drums to a carload. The double head type is used for lighter or liquid-type asphalt.

Satisfactory containers have been developed for heavy greases. Probably the most satisfactory in the experience of the oil companies is the drum with fiber sides and metal ends which is being manufactured by several package companies. Since they have the same head that was used on the old steel drum making pump attachment possible, this type has received wide acceptance. These drums are of 100-lb. capacity and are capable of being filled on existing machinery. These have been used for light greases and lubricating oils but are not recommended for this purpose. They are about 20 per cent cheaper than the all-metal drum and use only one-third as much steel.

Another type being used for greases is a 25-lb. capacity, plywood container with a paper gasket. One criticism of this type is the tendency of plywood to warp. These containers have the cover stapled in and therefore require a stapling machine and wire, both of which may be difficult to obtain. Their cost is a little more than that of similar capacity steel units. A somewhat similar package has its cover held in place with a metal band.

One of the real needs of the oil industry is for a small grease package where containers of from 1 to 5 lb. capacity are required. Quite a number of small grease packages have been developed. Most of them are impractical. Cylindrical containers, duplicates of those used commonly for ice cream but with suitable coatings applied, are being considered for this purpose.

Paper bags similar to those used for asphalt are being used for packaging wax. They are different in that a special parchment paper permits the bag to be peeled from the wax. This inner ply is 45 lb. parchment while the four outer plies are 50 lb. natural-kraft paper. At least one company is experimenting with corrugated cartons for packaging slab wax.

Packaging of liquid products has been the most difficult problem. One major company has reported testing approximately 50 liquid containers which through failure to remain leakproof, inability to withstand variable weather conditions, high cost handling operations or necessity for special filling and capping equipment have proved unsatisfactory. As a result, few companies have adopted new containers for motor oils and are marketing them in bulk, using the old type 55-gal. drum eqiupped with pump. One company has adopted a three-ply, plastic bonded, fiber, 1-qt. can which, it is reported, has withstood both rough handling and wide temperature ranges.

This year, one major company will use 12,000,000 spirally-wound, chipboard-parchment containers which it developed itself. The company used 500,000 such containers in extensive tests in 1942, after several years spent in development. The containers passed official trucking and railroad shipping tests. However, complex machinery is required to make, label, fill, and seal this container in a single operation and this equipment probably would be impossible to duplicate today.

At least two companies have adopted bottles for motor oils. Both are of 1-qt. capacity while one is a narrow-neck bottle and the other is a wide-month jar type. Their use was proposed in a pamphlet submitted to the Petroleum Industry War Council by the glass container industry.

Wooden barrels, both new and converted, have been used on an increasing scale for packaging both liquid and semiliquid oil products. New barrels are principally of 50 to 55 gal. capacity, six or eight-hoop type lined with animal glue or silicate of soda. They are available in a variety of capacities from 1 to 60 gal. Several companies supply reconditioned whiskey barrels from which the char has been removed and report that large quantities of these barrels are available. These barrels weigh 80 to 85 lb., have a 2-in. bung in the center and may be equipped with a 6-in. head opening for greases and are automatically lined with suitable coatings. Some time ago an oil-storage company purchased more than 35,000 of the barrels for lubricating oil.

Higher Ceiling Prices Established For Several Fields in Four States

WASHINGTON, D. C.—The Office of Price Administration last week established higher ceiling prices for crude oil at receiving tanks in several Texas, Louisiana, Kentucky and Arkansas pools. Price changes are as follows:

Rincon field, Starr County, Texas: The maximum price for crude petroleum of 40 gravity, A.P.I. and above is increased from $1.32 to $1.45 a barrel with customary differentials for crudes of lower gravity. Generally prevailing prices for comparable crude from nearby fields has been $1.45 and $1.50 a barrel.

McKamie pool, Lafayette County: Dorcheat, Macedonie and Big Creek pools, Columbia County, Arkansas: Effective February 3, 1943, the maximum price of sour distillate 57 to 68° A.P.I. is increased from $1.15 to $1.25 a barrel. The new price is in more adequate relationship to the maximum price of $1.40 a barrel for sweet distillates from the Texarkana pool in Miller County, Arkansas, and the Cotton Valley pool in Webster Parish, Louisiana.

Olla, Little Creek and South Olla pools, La Salle Parish, Louisiana: Effective February 3, 1943, the maximum price of crude of 40° A.P.I. gravity and above is increased from $1.30 to $1.35 a barrel. This price is compared to the maximum price of $1.48 a barrel posted for the University field, East Baton Rouge Parish. customary differentials are allowed for crudes of lower gravity.

Shields field, Nueces County, Texas: The maximum price of $1.25 a barrel is increased to $1.35 a barrel for crude petroleum of 40° A.P.I. gravity and above with customary differentials for crudes of lower gravity. For comparable grades of crude the price has been $1.35 a barrel. The new price is retroactive to December 1, 1942.

Sebree pool, Webster County, Kentucky: Retroactive to May 1, 1942, the maximum price for crude petroleum from this field is increased from $1.25 to $1.32 a barrel, the general prevailing price for comparable crudes in the area.

In general, the crude oils from the affected fields have had a single purchaser. The purchasers and producers involved have indicated that no price increases at resale levels will be requested.

The pools included in OPA's action are isolated instances where production was frozen at price levels which were abnormally low, or where normal relationship to crudes of comparable grades was not properly reflected.

The action is contained in Amendment 64 to Revised Price Schedule 88 and is effective February 3, 1943.

Typical western Pennsylvania refineries where maximum efficient operation is essential to manufacture of essential lubricants

Too Much Gasoline, Neutral Oil, Concern Of Pennsylvania Refiners

by Arch L. Foster

BRADFORD, Pa.—Pennsylvania refiners face a perplexing problem, one not of their own choosing or making. Drastic curtailment of motor-fuel consumption in the 17 eastern states has been leaving a surplus of gasoline on their hands since last May, a surplus which may be aggravated by the recent reduction in motor-fuel allowances for civilians. The recently directed 25 per cent reduction in gasoline magnifies the problem. Some Pennsylvania refiners cannot reduce their gasoline production by that much. Pennsylvania crude contains 30 to 40 per cent gasoline high in purity but low in octane number. To produce the lubricating oils now indispensable to aviation and other military operations requires that all possible lubricating stock be made from the crude and the gasoline follows inevitably along with the rest.

Not only is there currently too much gasoline in Pennsylvania but stocks of neutral oil are backing up in the refiners' tanks. Neutrals are becoming cumbersome for two reasons. Practically all of the bright stocks are going into military use and there is not enough left to blend with the neutrals to make the conventional line of automotive and other lubricating oils. Stringent reduction in civilian motoring and in nonessential commercial-automotive operations has seriously reduced consumption of the lighter grades of Pennsylvania oils at a season when the light neutrals are normally absorbed in such products as SAE 10W and 20W, even to the extent of liquidating surplus neutrals which may be stored during the summer months when heavier oils are used. Aviation lubricants require practically no neutrals. Heavy-duty oils for military services other than aviation use comparatively little of the light oils. And, if throughout the country 3 to 4 gal. of gasoline per week is the maximum permissible civilian-car consumption, the requirements for Pennsylvania as well as other lubricants may be expected to drop proportionately, possibly to one-half of the peacetime figures.

Another Unsolved Problem

Still another major problem hasn't been solved. There are those who say that, wartime regulation being what it is, the answer to this one lies almost wholly in Washington. That problem is the growing scarcity of Pennsylvania Grade crude. During the last week in December approximately 70,000 bbl. daily of Pennsylvania crude were produced, a drop of some 2,000 bbl. from the previous week. Records show that since last July the production has dropped from about 78,000 to 80,000 bbl. daily to a current rate of 70,000 to 72,000. During the same period, runs to stills dropped from a high of about 85,000 bbl. daily average last summer and early fall to around 74,000 to 75,000 bbl. at the year's end. To maintain even the lower current rate and to meet the demands chiefly for war products it was necessary to draw from storage to make up the deficiency of production. Study of statistics shows that crude stocks have been dropping steadily since January 1941 when inventories were slightly over 4,000,000 bbl. By January 1942 crude stocks were reduced by 800,000 bbl. to 3,205,000. In September 1942 crude stocks had fallen below 3,000,000 bbl., and last November the reported storage totaled 2,718,000 bbl. Necessarily such a situation cannot continue indefinitely without serious consequences to the industry involved and to the war operations which are, in some measure, dependent on Pennsylvania oil operations.

The record of well completions is equally unsatisfactory. For some years that figure has fluctuated from month to month, but with a fairly stable average. After the price of Bradford crude was raised to $3 an upturn occurred.

Completions continued on a fairly smooth curve, which was flattening out when Order M-68 was issued. The material-conservation order threw drilling into a nosedive. To complicate this situation still further the uptrend in over-all operating costs is already forcing marginal producers nearer insolvency.

Altogether, the Pennsylvania picture is no more heartening than in other parts of the country's oil industry. Several solutions may be practicable as wartime measures, but as yet no action has been taken. The

most serious problem is inordinate additions to gasoline storage. Pennsylvania refiners have estimated that they individually have only from 10 to 30 days storage capacity for gasoline surpluses, daily becoming more pronounced. No refineries in this area have large capacity. Storage is correspondingly limited.

The order limiting gasoline production to 75 per cent of earlier average yields tends to alleviate the pinch but the regulation brings with it another series of unsolved equations. To reduce gasoline production requires less cracking, lowering of end points. Pennsylvania gasoline is low in octane number. Either cracking or reforming, plus lead, must be used to make it competitive. On the average, complying with the federal order by reducing end points to 300°-325° F., about the lowest practicable figure, lowers gasoline yield to something like 33 to 34 per cent on crude. Reforming, the other way out, reduces the yield on crude to about 30 per cent, or about 85 per cent yield on the reformed naphtha.

Shipping Restrictions

Inability to ship products recovered in compliance with regulations compounds the dilemma. Pennsylvania refiners are forbidden to ship gasoline westward into Ohio, where formerly much of their gasoline had been marketed. The same shipping restrictions apply to western New York, where much Pennsylvania gasoline was consumed. At least one refiner has been granted exception from the order for 2 weeks, in order to supply the company's own stations in New York with gasoline. The restriction on shipping west into Ohio is part of the program to aid oil movement to the eastern seaboard to relieve the shortage there. But insufficient tank-car capacity is available to ship eastward. Fuel and heating oils, going to avert suffering in the East, command all the available tank-car capacity. All gasoline pipe lines which formerly carried gasoline from the East Coast into the Appalachian and Midwest areas have been reversed, but that has not solved the problem because they are picking up products and crude mainly from Ohio and elsewhere rather than from western Pennsylvania.

Western Pennsylvania motorists are reduced to the 3-gal. weekly limit, along with the remainder of the 17 eastern states.

One Pennsylvanian stated this week that "we are in the ridiculous position of having fairly good tires on most cars; our automobile tanks are empty when they could as easily be full; our refinery tanks are full when good economics and the demands of the war program dictate that they should be empty." Meantime, general travel, even for business, is in a snarl. Difficulty in getting about the area except to one or two large cities slows down the transaction of business to a serious degree, in an area where three-fourths of business travel has been via car for several decades.

Some of the solutions suggested by Pennsylvania refiners are:

1. Lift the gasoline-rationing ban on civilian driving to the extent at least that it is limited in midwestern states. Since the gasoline cannot reach the eastern consumers, local liberalization would not interfere with the program of supplying the East. Therefore, since it has been stated repeatedly that in the country west of the Appalachians gasoline rationing is to conserve rubber, not gasoline, and since the Pennsylvania area is as flush with gasoline as Texas or Oklahoma, to fail to place this region on the same basis cannot be excused by either wartime necessities or sociological psychology. Supplying local outlets and their customers would not use a single tank car or pipe line because distribution long has been by tank trucks in the area.

2. Permit shipment of gasoline via tank truck to those nearby areas in eastern Ohio and western New York, at least to supply refiners' own stations, in an area where these companies have carried on retail marketing regularly in the past. Similarly this would involve no interference with eastern shipments of any petroleum product.

Neutrals Can Be Used

The neutral situation is entirely different. With civilian consumption down and with bright stocks going to essential services, neutrals are piling up rapidly. To allow the refiner to continue to make the fuel oils and heavy lubricants so indispensable in war and in keeping the east warm it has been suggested that:

1. Lubricating oils for civilian or any nonmilitary use be restricted to grades 10 and 20 (SAE). A large proportion of lubricating oils for trucks, buses and pleasure cars in the past have been these light grades, SAE 10W, requiring no heavy bright stock and 20W, requiring only a few per cent. If necessary these neutrals can be blended with non-Pennsylvania bright stocks in qualities not satisfactory for military uses and supplied to civilian consumers.

2. These neutrals can be processed in refineries operating solvent-extraction processes and thus refined to meet specifications such as 2101A, for war uses, augmenting the supply of those products which are near the eastern seaboard and points of embarkation for war-front shipments. Such an action may simplify matters by relieving the railroads and tank cars from hauling lubricating oils from more distant western refineries as is now being done. At least 10 per cent of the total military lubricating-oil requirement is for the lightest, SAE-10 grade, which calls for several hundred barrels of lubricants per day, a factor which if true and practicable would relieve the pressure in a very short time on Pennsylvania neutrals.

Price Regulates Production

Producers state that increase in output is dependent almost wholly on price. Producers must see a reasonable chance for return on the money invested in wells before risking exploration money. The higher cost of finding and producing more oil cannot be financed at present prices which costs already burden many of the more expensive operations. Water flooding is costly, especially at the installation stage, and returns from the later production must pay the cost. Some months ago the U. S. Bureau of Mines placed a staff of engineers at Franklin to study methods and possibilities for introducing air or gas-lift operations into Pennsylvania in several localities where these methods are said to offer some possibility of success. The work of this corps will require time, in collaboration with local engineering organizations, before any practical conclusions can be reached. If the conclusions are favorable—and they are not known as yet—the cost of installations cannot be paid for at present prices, say producing engineers who know these fields. Therefore, they say, a boost in Pennsylvania crude prices is necessary if this important oil is to be produced in quantity sufficient to meet war needs or even if the present production rate is to be maintained.

The prohibition against tank-car inshipments to the eastern states announced late last month may provide speedy correction of the conditions harassing western Pennsylvania refiners. Previously, the PAW Marketing Division announced plans to arrange outlets for gasoline produced as an unavoidable consequence of manufacturing lubricating oils for military forces and other essential consumers.

Fuel-Oil Rationing Is Ordered in Northwest

WASHINGTON, D. C.—The Office of Price Administration moved this week to institute restrictions on the consumption of heating oil in the Pacific Northwest, following instructions from the Petroleum Administration for War that a reduction of 25 per cent is necessary.

Inventories of fuel oil, the PAW reported to OPA, are declining and that prospects for diversion of transportation facilities to more essential service make it necessary to conserve supplies.

More Cost Data Needed To Unseat OPA Policy

(Continued from Page 12)

petroleum matters for some time. These costs must be separated from direct crude-production costs and investigations are now in progress by the various agencies to develop a solution for the problem but OPA has indicated in the past that it cannot properly be solved by a nation-wide increase in price, which would impose extraordinary price increases upon customers."

Several oil men this week, analyzing the OPA statement and the U. S. Tariff Commission report, expressed fear that a predicate is being laid inimical to the interest of small producers. The OPA recognized the necessity for maintaining production from small properties and said that in some instances "price adjustments would serve good purposes in stimulating their rehabilitation and continued operation."

Fear Premature Abandonment

If selected crude prices become a rule in OPA, oil men fear that the small properties will be abandoned prematurely. Purchasers, it is pointed out, would not long continue to buy crude in fields if required to pay a premium for crude just because they were small producers. In isolated instances, small fields would continue to provide the most economic desirable source of crude for nearby refiners remote from other supplies. However, OPA points out, the small fields are scattered throughout the country and their production competes with less costly crude. Purchasers doubtless would continue runs from the small fields even if forced to pay premiums for crude for the duration of the war but, with return of peacetime economy, price equaliation would follow abruptly.

Quotations from OPA's statement in defense of its stand against a general advance follow:

"Such an increase would add heavily to the consumer's fuel bill and dangerously threaten price control, since oil is a basic commodity in the domestic, industrial and military economy.

"There will be exceptions, which is true at any time, but to raise all prices to relieve the exceptional producer would disrupt the entire price structure of the petroleum industry and would not be justified by any evidence which has been put forward to date.

"Such an increase would necessarily be reflected in the cost of living and the burden of wartime costs. It has been estimated that each cent per barrel added to the price of crude oil in the United States would mean adding $14,000,000 per year to the nation's fuel bill. Crude petroleum production in 1942 was 1,385,000,000 bbl.

"If there is a sound case for an over-all increase in price of crude petroleum such a case has not yet been presented. On the other hand, the extensive studies and surveys which have been made and recently published for OPA by the Tariff Commission, it is held, clearly indicate that both the price of a barrel of oil and the margin of realization above cost of production are greater than in most recent years.

"This condition was shown particularly for the third quarter of 1941, when prices, costs and margins were very near the level of October 1941, prices at which ceiling prices were established for petroleum and petroleum products under Emergency Price Control Act of 1942.

"Increased supplies of oil cannot always be obtained by means of price increase. Higher prices for oil, for instance, will not relieve the eastern fuel oil and gasoline shortage. That is largely a transportation bottleneck. Precisely similar conditions hold where increased production is limited by the available equipment or the allocations on critical and strategic materials.

"Both industry and the consuming public are fully aware the job of OPA is to keep the cost of living at sane levels by safeguarding the public interest through discouraging inflationary trends, officials asserted. In some known oil pools where abnormally low prices prevail, higher prices may be necessary to cover the costs of new drilling, and the agency is willing to make adjustments where they will result directly in bringing more oil to market to meet specific needs. But neither the public, the Government nor the industry can be further burdened with staggering oil bills simply because some producers are not realizing all of the profits they might have once enjoyed.

Importance of Stripper Wells

"Surveys and studies undertaken by OPA and confirmed by U. S. Tariff Commission findings indicate a steady increase in crude-oil prices until ceiling prices were established at October 1941 levels. If price control had not been put into effect it is contended that prices would have continued to rise above reasonable levels.

"Another reason which has been advanced for a general increase in crude-oil prices—as much as 50 cents a barrel has been proposed—is to save the wells which are capable of producing only a few barrels a day. These stripper and marginal wells have been an important part of the oil industry since the first years of the industry's development.

"Such wells are of many types and classifications and no uniform condition exists. The majority of these small producing wells are not now operated at a loss, nor could they produce much more oil if the price was doubled. Such wells are located throughout the oil-producing states and it may well be that in some fields, in some areas and for some grades of oil for which there is great demand, a local price adjustment would serve good purpose in stimulating their rehabilitation and continued operation. But in few instances has a documented case been submitted to OPA classifying such stripper and marginal wells within a locality, district or area.

"OPA has maintained and will maintain a sympathetic and open-door policy to any and all petitions for price adjustments, especially where abnormal conditions have resulted in hardship and uneconomic operation at present price levels. Such price adjustments were expected and are inevitable. But because the widespread publicity attending the gathering pressure for a substantial increase in crude-oil prices coincides with the Government's own report of its investigation through the Tariff Commission into crude-oil prices and costs, its presentation to the public and to industry is deemed timely."

Defense Problems Topic Of A.S.M.E. Speaker

Various engineering problems in defense industries will be discussed at 8 p.m. February 4 by Col. James L. Walsh, chairman of the American Society of Mechanical Engineers' committee on national defense, before the Mid-Continent section of the society at the Mayo Hotel, Tulsa. The speaker is en route to Dallas, Tex., where an industrial "clinic," sponsored jointly by the A.S.M.E. and the War Production Board, opens February 5 for all engineers and executives engaged in war production work.

In his discussion on "Logistics—the Science of Survival," Colonel Walsh will outline various engineering problems in defense industries and relate how others have overcome some of the most troublesome.

Colonel Walsh was graduated from West Point and served in all grades in the U. S. Army from cadet to colonel. He was awarded the Distinguished Service Medal under the approval of Gen. John J. Pershing. After World War I he was instrumental in organizing the Army Ordnance Association in 1919 for the purpose of salvaging war data.

PAW Directors Review Material Outlook

Petroleum Administration for War district directors of production holding their first conference. E. O. Buck, District 3, Houston, Tex.; Edmund Jussen, representing District 5, Los Angeles, Calif.; Michael J. Foley, District 4, Denver, Colo.; James R. Wylie, Jr., District 1, New York and Pittsburgh, Pa., and Wirt Franklin, District 2, Chicago, Ill. Since the picture was made, H. R. Gallagher has been appointed director in charge of District 5

WASHINGTON, D. C.—Directors of production from the five PAW districts met together for the first time as a group with officials of the Petroleum Administration for War in Washington January 21 and 28.

The group discussed a wide range of current production problems common to all oil-producing regions, and decided to meet regularly every 2 months. While officials said no definite action was taken, it is understood such subjects as the supply of drilling materials available during the coming months, outlook for crude-oil demand and production and possible changes in the M-68 and P-98 conservation orders.

Higher Preference Ratings Given by Amended P-98-b

WASHINGTON, D. C. — Higher preference ratings for materials required by the oil industry for certain operations were assigned January 30 by the War Production Board under Preference Rating Order P-98-b, which was amended upon the recommendation of the Petroleum Administration for War.

Preference ratings of AA-1 have now been assigned for materials to be delivered to petroleum industry operators for use in maintenance and repair operations or for use in alterations. Previously, these materials were assigned a rating of AA-2X or lower.

The amended P-98-b also provides that in cases of actual break downs, an operator can expedite delivery of materials by obtaining the countersignature of the appropriate district office, if the item to be purchased costs less than $500.

In all other instances — including actual break downs where an item costs $500 or more—an operator cannot apply an AA-1 rating until he has received approval from the WPB Director General for Operations. Applications for such approval should be addressed to the Petroleum Administration for War, South Interior Building, Washington, D. C., Reference: P-98-b.

Provided that an item costs less than $50, materials to be used in research laboratories may be obtained by applying a rating of AA-2X or lower without a countersignature from a district office or approval from the Washington offices of either PAW or WPB.

The amended order also clarifies the fact that an operator requesting approval to apply various preference ratings no longer is required to name a supplier or suppliers from whom he expects to obtain the material.

DEATHS

W. G. Leedy, 39, electrical engineer for Big Lake Oil Co. at Texon, Tex., since 1928, died last week after an illness of 2 weeks. He worked in the Ranger field during the boom there and for a number of years was a member of Big Lake Oil Co.'s baseball team at Texon. His widow and a daughter survive.

Leo H. Wilson, Sr., 71, died suddenly at Sarnia, Ont., recently. A native of Petrolia, he was a prominent driller, his work in foreign fields taking him to Sumatra in Netherlands East Indies.

J. Frank Egan, 56, drilling contractor, died last Saturday at his home in Tulsa after a 9-month illness. Mr. Egan came to Tulsa from Ohio 33 years ago. His entire business career was spent in the production end of the oil business. His widow, a daughter and two sons survive.

Hal Hughes, oil operator and drilling contractor of Abilene, Tex., died last Saturday. He had been ill several weeks. Mr. Hughes had drilled numerous wells in the Burkburnett, Waggoner and East Texas fields and in recent years had operated as a wildcatter. He went to Abilene from Electra, Tex., 15 years ago. He is survived by his widow, a daughter and two sons.

U. S. Powers, 56, oil-well driller, died Sunday night at his home in Tulsa. Death was attributed to a chronic heart ailment. A native of Missouri, Mr. Powers worked as a driller in Texas and Oklahoma. He had lived in the latter state 15 years. His widow, a son and a daughter survive.

Fred DeLong Rexwinkle, 52, for 9 years general superintendent of the Whiting, Ind., refinery of Standard Oil Co. of Indiana, died January 23 at a hospital in East Chicago, Ind., after a 2-week struggle with pneumonia. Mr. Rexwinkle, a resident of Whiting most of his life, served the Whiting refinery as assistant general superintendent for 5 years before assuming the general supervision of the plant. His wife and a daughter survive.

Fred W. Eastman, 70, a resident of Tulsa since 1924, died at his home Saturday night of causes incident to advanced age. He had been associated with Gypsy Oil Co. as a lease man and with the production department of Gulf Oil Co. His widow and a daughter survive.

Leon Frederick Wood, 49, oil producer and drilling contractor of Bradford, Pa., died last week. He had been ill for 10 weeks, and apparently had been on the road to recovery. Mr. Wood had lived in McKean County, Pennsylvania, virtually his entire life. His wife, a son and a daughter are among the survivors.

Pearl I. Harlan, 37, Independence, Kans., was killed when he and a fellow pipe-line worker struck a cache of dynamite while digging on a pipeline 6 miles east of Shidler, Okla. He was an employe of Cities Service Pipe Line Co. His wife and six children survive.

Claude E. Martell, 35, a boilermaker employed at Tulsa by Mid-Continent Petroleum Corp. at its refinery, was killed last week when a heat exchanger he was repairing exploded. It is believed he was struck on the head by a piece of flying metal. He had lived in Tulsa for 26 years. His widow, two daughters and a son survive.

Application of DIRECT MOTOR DRIVE With Use of ELECTRIC MOTOR

by Neil Williams

Independent rotary drives in the past have been restricted largely to steam-powered drilling rigs. This article describes an installation on the Gulf Coast using an electric motor with a direct hookup.

SEPARATE rotary drives have been employed frequently in the operation of steam drilling rigs. Their application to mechanical and electric rigs, however, has not often been attempted. One reason for this, so far as electric rigs are concerned, may be that the latter have been less generally used, and consequently there has been less occasion to make such applications to them. Mainly, certain mechanical problems having to do with providing an adaptable means of transmitting the power of the electric motor to the rotary table have stood in the way of these installations.

Advantages of an independent drive for the rotary table are well recognized. Rotating entails considerably lighter power loads than hoisting, so when the rotary table is driven by the hoisting engine or motor there is an excess of power for that purpose. In an independent drive for the rotary, a smaller engine or motor can be used, making possible substantial economies in power and fuel costs. At the same time, with the hoisting engine or motor operated only for that purpose, wear and tear on this equipment and on the line or jack shafts, through which the rotary table would be driven, are reduced, saving in maintenance and replacement costs.

Operation of the rotary table calls not only for speed variations over a fairly wide range but also for smoothness and flexibility in control. With the steam engine as the prime mover these requisites are met naturally, and its use in an independent rotary drive installation presents no special difficulties. Application of steam power is direct and speeds are controlled solely by throttling since a steam engine develops its greatest torque at low speeds. However, in the case of internal-combustion engines and, to some extent, electric motors it usually has been necessary to transmit the power through reduction-gear hookups in which speed changes are controlled by clutches.

Internal-combustion engines develop maximum torque at high speeds, and as the speed of the engine is reduced the torque approaches the stalling point. Thus, for greatest efficiency and to utilize the maximum torque, it is desirable to operate such engines at fixed high speeds, depending on different reduction-gear ratios in transmission of power for variations in speed and load of the operating unit. Consequently, when applying this type power to rotary drives, problems are presented in providing the wide variations of speed desired without complicated transmission units and special clutch installations.

Need of Flexible Coupling

Electric motors approach the steam engine in smoothness of performance and control. However, in direct drives their ability to absorb shock

Fig. 1—Direct rotary drive with electric motor, with protective hood removed, on diesel-electric rig operating on Louisiana Gulf Coast. Opening on front of draw works through which chain drive formerly operated is covered with plate, bolted on. The large amount of additional space for pipe racking is apparent

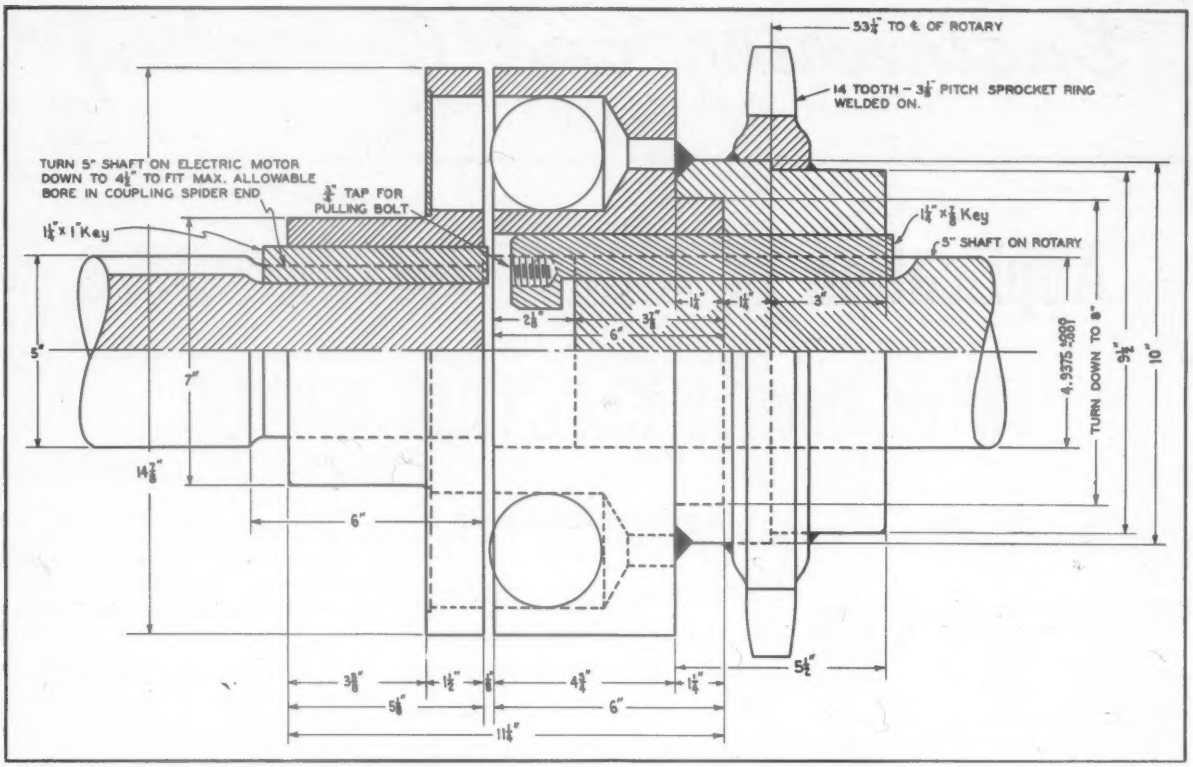


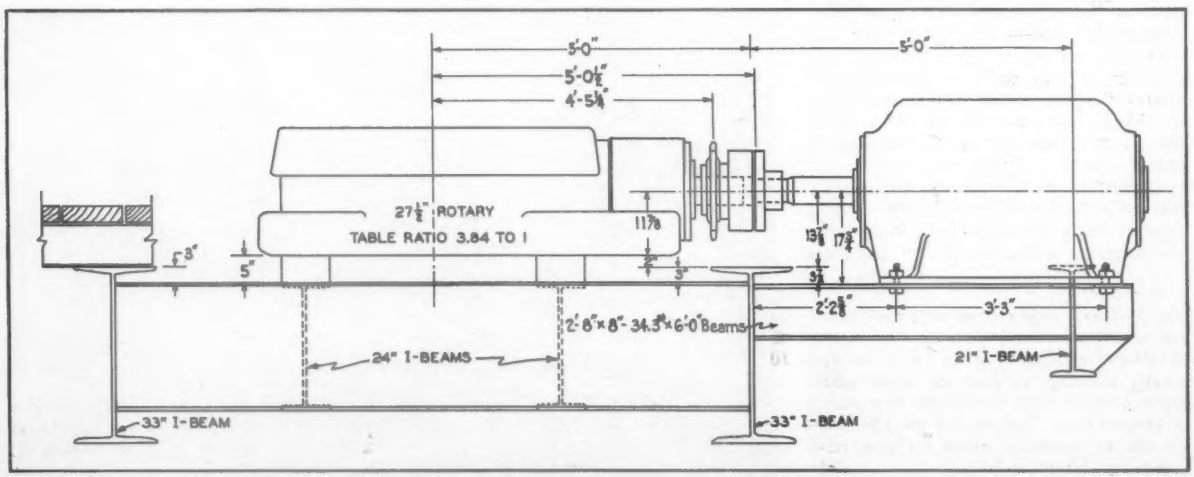
Fig. 2—Design of special coupling utilizing rubber balls which makes installation of direct rotary drive with electric motor possible

loads, such as are incurred in rotary-table operation when increasing and decreasing speeds, has been dependent upon the provision of a suitable flexible coupling or connection in the drive shaft between the prime mover and the load. In the lack of adaptable couplings for that purpose, operation of motors also has usually called for installation of reduction-gear units or other means of indirect drive.

When the rotary table is operated by the hoisting engines or motors, the drive is usually by means of a chain from a sprocket on the line or jack shaft of the draw works, or when there is a secondary drum shaft the sprocket can be on this shaft. The sprocket is engaged by means of a clutch, and speed changes, when steam is not the power, are attained by different gears in the main transmission unit through chain drives to the shaft. By various combinations of gears, a fairly wide range of rotary speeds often is obtainable, but even here the various speeds are fixed, depending on the ratios of the gears or sprockets.

In the use of internal-combustion engines or electric motors for independent rotary-drive installations in the past not only has it been necessary to have separate transmission units for these installations, but the equipment has been large, and, placed on the derrick floor, has taken up much needed working space. Particularly in deep drilling, such as on the

Fig. 3—Method of installation of direct rotary drive with electric motor showing how supporting beams are placed in respect to rotary table supporting members



Gulf Coast, where long strings of heavy pipe must be handled and racked, installation of any additional large equipment on the derrick floor is objectionable. Elimination of the long chain drive from the hoisting unit by use of the separate rotary drive is an important advantage but this advantage may be more than offset by the extra space taken up by bulky rotary-drive equipment on the floor.

Problems which have stood in the way of employment of electric motors in direct rotary drives apparently have been overcome, however, in an installation that has been made on a large diesel-electric rig operated by a large major company on the Louisiana Gulf Coast. The installation, the first of its kind, now has been in operation several months and has proved unusually effective, meeting all requisites for wide flexibility and simplicity in speed control and smooth performance. The unit is so small and compact that it occupies less space on the derrick floor than a steam powered prime mover, and is so placed that it presents practically no obstruction.

The rig is a drilling barge assembly used in maritime operations in the marsh and water areas along the coast. Diesel engines driving the generators supplying the electricity are capable of delivering 1,000 hp. The power plant is housed on a separate submersible-type barge with cable extensions to the main drilling barge. The draw works, three mud pumps, wire-line coring unit, and various auxiliary units are all driven by independent motors as prime movers. All equipment is of the large and heavy-duty types and suitable for Gulf Coast deep drilling.

Design of Special Coupling

For the new direct rotary drive a mill-type motor (Fig. 1) is being used. It develops 150 hp. at 450 r.p.m. with 250 volts, and with 350 volts it has a speed of 630 r.p.m. The direct drive is made possible by a specially designed flexible coupling, shown in an accompanying drawing (Fig. 2), which connects the motor and rotary shafts. Contact in the coupling is through six 3-in. solid rubber balls, which are placed in equally spaced sockets around the inside faces of the two joining plates of the coupling. These absorb all the shock and carry the load in operation of the drive. When the coupling plates are joined, the balls are held securely in position with a clearance of ⅛ in. between the plates. The two coupling plates are fastened on the ends of their respective shafts by locking keys, which are easily removable. The balls are replaceable by sliding back the coupling plates. The back shoulder of the rotary-shaft coupling plate includes a 14-tooth 3⅛-in. sprocket ring, welded on, for use in a chain drive from the hoisting unit, if desired. Both the motor and the rotary have 5-in. shafts. The motor shaft was turned down to 4½ in. at the end to fit the maximum allowable in the coupling spider end.

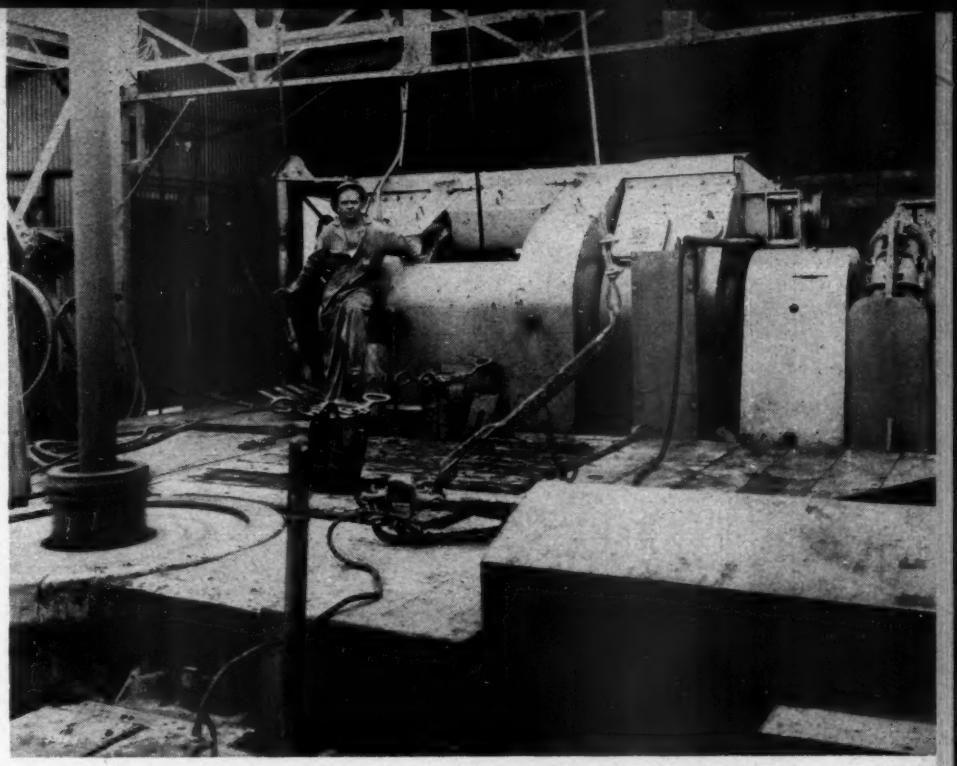


Fig. 4—In operation the motor and transmission shafts and coupling of independent electric rotary drive are covered with a metal hood sectionalized platform unit

Motor Lowered in Derrick Floor

To align the motor and rotary shafts the motor is set in an opening partly below the level of the derrick floor (Fig. 1 and Fig. 3). It rests on and is bolted to two 6-ft. by 8-in. by 8-in. 34.3-lb. I-beams running lengthwise, one under each side of the motor and spaced 30 in. apart, the width of the motor base. These members are supported between one of the main 33-in. I-beams which carry the rotary table and an auxiliary 21-in. beam which has been placed in the floor structure parallel to the 33-in. beam. The back ends of the two supporting members for the motor are set into the 21-in. beam through slots, cut to shape, and welded solidly into place. To lower the motor to the desired level, the top of the 21-in. beam was cut down 3⅞ in. at the points of intersection of the members. The front ends of the two members are welded into the side of the 33-in. main beam. The position of the motor on the two supporting members is at a place extending partly over the 21-in. beam so that a greater part of its weight is carried by that member. The center of the 21-in. beam is approximately 10 ft. from the center of the rotary table.

A semipermanent installation has been made possible since the rig is mounted on a drilling barge and all equipment remains in place during moves. However, if it is desired to dismantle the rig or to remove the separate drive and change back to the chain drive from the hoisting motors, it is necessary only to disconnect the coupling and unbolt the motor from the supporting beams. This is easily and quickly done.

When in operation the rotary-drive motor is enclosed in a small, boxlike metal hood (Fig. 4) which covers the opening in the derrick floor in which the motor sets. Also, a platform section, which fits flush with the pipe platform and the top of the rotary table, covers the shaft and coupling assembly between the motor and rotary table. This not only is a protection to the installation but also a safety precaution for workmen on the derrick floor. The opening in the front of the draw works through which the chain drive from the line shaft formerly extended has been covered with a metal plate, which is bolted on and can be removed easily if desired.

Push-Button Switch Control

Operation of the rotary motor is controlled entirely from a push-button switch (Fig. 5) installed at the driller's position. This is wired through a power control box (Fig. 6) located at the back of the motor floor where it is easily accessible but out of the way. A separate control box and set of switches serves the motors for the draw works and the pumps.

Gear ratio of the rotary table is 3.84 : 1. With this the speed can be held down to a rate that the table barely turns and can be advanced smoothly to as much as 200 to 250 r.p.m. With the chain-driven drive

Fig. 5—Push-button switch-control installation at driller's position for independent electric rotary drive and for draw works and pump motors

from the line shaft it was not possible to provide a table ratio that would permit slowing down the rotary to the slow speeds that are now possible. An unusually responsive and quiet performance has been attained.

Elimination of the chain drive has greatly increased space available for pipe racking, which in deep coastal drilling when long strings of pipe must be handled, is an important advantage. Along with this, it has been possible to work out a method of racking the pipe in diagonal rows, accommodating more pipe, more conveniently, than with the straight rows. An accompanying picture (Fig. 1) shows the diagonal platform for pipe racking. On this the first stand is racked in the far right-hand corner, and as the pipe is racked the successive rows accommodate an increasing number of stands. The pipe is racked not only farther back but also farther forward than normally. Racking of pipe is facilitated so that as much as 40 minutes are saved for a trip from depths of around 10,000 ft.

Fig. 6—A separate power-control box for independent electric rotary drive installed at back of draw works motor floor. Push-button switches at the driller's position are wired through this box

Ferro Sulfide Source of Unexplained Tank Fires

THAT some of the many explosions or fires of mysterious origin which have occurred in oil-storage tanks may have been caused by self-ignition of ferro sulfide formed on the walls of the tank is the theory advanced by D. van N. Schonegevel, Great Lakes Carbon Corp., Chicago. In substantiation of this, he relates an experience with an explosion of a 110,000-bbl. tank in a large refinery:

"This tank, which had been in use for the storage of light products, had been emptied and opened for cleaning. There was about 4 in. of sediment on the bottom which gradually evaporated in the high temperature prevailing in that area. All manholes and handholes had been opened for more than a week. Then on a certain afternoon the tank suddenly exploded. It was absolutely ascertained that nobody had been in the neighborhood of that tank. The cause must have been self-ignition of ferro sulfide formed on the walls of the tank. The sediment must have evaporated sufficiently to keep an explosive mixture of the tank.

"It is this particular danger of ignition to which I want to draw attention. I have seen more fires of mysterious origin where the real cause was never found but which probably could be attributed to ferro sulfide which during its drying-out period sometimes starts to glow and which may cause a spontaneous ignition.

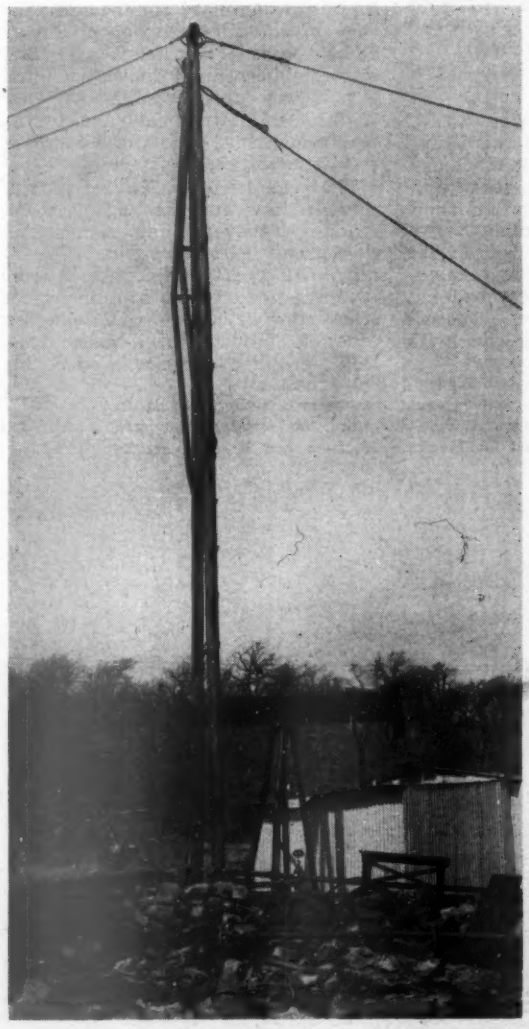
"In connection with the above fire, the roof of the tank was thrown off and dropped on two pipe lines, one 10-in. and one 4-in., connecting another tank with the pipe-line system. The other tank was being drained of gasoline through the 10-in. line, and the 4-in. line was drawing off water. Through the broken pipe gasoline flowed out which was ignited by the shock and a large fire started, gradually surrounding five tanks located in the same fire wall. The valve on the tank from which the broken line originated could not be reached at that time because it was exactly under the lee of the fire. We subsequently had to combat fire in nine large tanks filled with light products of which we could save eight while one had been surrounded by fire for such a time that the gasoline started to boil and foamite was of no avail.

"We have subsequently rearranged all pipe lines inside the fire wall to be buried or otherwise protected."

OPERATING IDEAS

Pumping Unit Built From Miscellaneous Parts

WHEN the operator of this well in a Central Oklahoma field wanted to put the well on the pump the only new equipment he was able to obtain without delay was the walking beam and counterbalance. Not to be stopped he assembled the rest of the unit, as well as the pulling mast, from discarded parts and miscellaneous material. The sampson post was made from old pipe. The gear box formerly was a part of an old chain-driven unit which was worked over. Legs of the mast are two long poles braced with old pipe.



Utility Pump Mounted on Trailer Facilitates Handling

AROUND a lease or other oil property there is frequent need for a small pickup pump that can be moved from one place to another. It may be that some leakage oil or waste has accumulated at some spot and must be moved to a tank or to a waste pit, or that some oil must be transferred from some tank to another or from a tank truck or pit to a tank, or that some oil or waste pit must be emptied. Generally, the pump for this purpose is mounted on skids and is moved from place to place on a truck. In such cases, the pump must be handled by loading and unloading on and off the truck. One operator has simplified this work by providing a utility pump mounted on a two-wheeled trailer. The trailer is easily towed, either by hand or behind a car or truck to any place desired.

Oil Separators for Diesel-Engine Mufflers

BECAUSE of not being able to obtain regular mufflers for diesel engines on a mechanical power rig operating in a townlot area of the Oklahoma City field, the drilling contractor has made use of two old separators, one for each of the two engines. The exhaust is discharged into the separator through an inlet opening near the bottom. No alterations in the separators was required. Not only do the separators serve as effective silencers but no back pressure is created.

Modern pumping equipment ready for installation on water-flood property producing from a 2,000-ft. sand

Some Kansas Flooding Practices

In flooding shoestring sands of southeastern Kansas, unique practices are used for dealing with local conditions, multiple completions and water supplies from a variety of sources

by Paul Reed

KANSAS water flooding is no exception to the rule, which applies to water flooding generally, to the effect that there is no uniformity in the methods used for solving operating problems. Even where the problems are almost identical, operators in the same area will frequently be guided by divergent principles. The purpose of this article is to discuss certain practices employed in the water flooding territory of southeastern Kansas. Particular attention will be given to some of the procedures observed in visiting operations in the Rantoul and Osawatomie areas as well as certain shoestring properties to the southward. In an article entitled "Secondary Recovery in East Kansas Grows in Importance," October 12, 1942, page 22, the significance of recent developments was reviewed; in "Policies and Results of Water Flooding in Kansas," December 3, 1942, page 31, consideration was given to what had been accomplished by some of the successful operators.

In the past year there have been a number of instances of operators introducing water flooding into shoestring sands where they had been repressuring with gas or air for a number of years. In these programs, water flooding has been applied on part of the shoestring while at the same time the operator continues to repressure the remainder with gas or air. One operator who is doing this on a shoestring which has been repressured with gas since 1935 says that results indicate that the lifting cost with water flooding is about half of that for producing with gas repressuring. Lifting cost for this shallow shoestring property, including depreciation of equipment as well as the regular lease expenses but not including depletion or office overhead has been running between 40 and 60 cents per barrel during repressuring with gas.

The water-flooded section is near the center of the shoestring. The pattern adopted is the elongated or rectangular five-spot, 250 by 500 ft. Input wells are not located as near the edge of the shoestring as producing wells. Some of the input wells had formerly been used for injection of gas. Before converting them to water flooding they were shot and tubing was cemented in the usual manner; results have been satisfactory.

The general custom, in this part of the Kansas water-flooding territory, is for operators to pump rather than flow producing wells from the beginning. One operator who turned from pumping to flowing on a fairly large scale later returned to pumping in order to produce at a faster rate. However, in some cases stopcocking

Electric pumping unit mounted on concrete slab which is as portable as the unit itself. Equipment for feeding compound into lead line and for breaking emulsion can be seen nearby

is done with success in the last stages of flooding after the peak has past and production has dropped to a marginal status.

A large part of the activity for extending water flooding in Kansas has been in the shoestring pools of Franklin, Miami and Linn counties where much of the production comes from a depth of less than 600 ft. In the study of properties for flooding possibilities in an area considerably to the westward where sand is at a depth of 2,780 ft., an unusual procedure was adopted in coring. To obtain a core, an attempt was made to open one of the abandoned wells which had been plugged. With a rotary, 2,000 ft. was drilled in the old well in 22 hours until an obstruction was encountered which was believed ot be either a bailer or pipe. A whipstock was set for the purpose of coring sand at a point at a distance from the old well. Although this was an expensive operation it was believed to be the most feasible way to obtain a core under the circumstances.

Multiple Completions

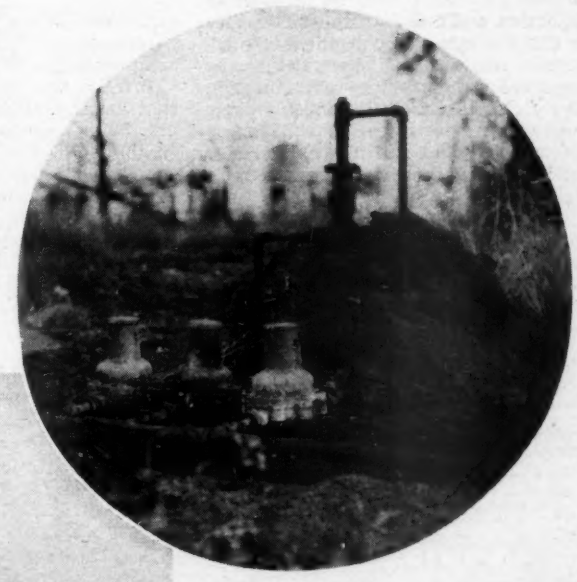
In the Rantoul area multiple completions enable operators to have a single well serve two or three sands, all of which are at depths of less than 600 ft. Locally these sands are known by the following terms: first sand, Peru; second sand, Squirrel; third sand, Bartlesville. The first and second sands, from which most properties in the area produce, are each 11 to 20 ft. thick; thickness of the third sand is usually less than 10 ft. Tops of the sands are likely to be found at approximately the following depths: first sand, 330 ft.; second sand, 490 ft.; third sand, 590 ft.

The method for a multiple completion for all three sands is as follows: A 10-in. hole is drilled to 220 ft. to set 8-in. to case off salt water in the 190-ft. sand. An 8-in. hole is drilled to 320 ft. and reduced for drilling all three sands with a 6-in. bit to a total depth of about 600 ft. The third sand is shot first, then the second and first sands. They are all cleaned out together. After shooting, the hole is reamed to 8 in. to the top of the first sand. Then a string of 1-in. and packer is run to the top of the third sand and cemented with 10 sacks of cement. Over or surrounding the 1-in., a string of 2-in. is run to the top of the second sand with an anchor extending to the top of the third sand; the 2-in. is cemented with 10 sacks of cement. Over the 1-in. and the 2-in., a string of 4⅞-in. casing is run, at the bottom of which there is a 4⅞ by 6-in. swage nipple which lands the string on the top of the first sand where it is cemented. At the top of the well three lines connect with the braden head; on each of these lines there is a meter. A compressor with the drilling rig tests packers before cementing. Shooting is frequently done according to recommendations made on the basis of laboratory data.

Water for flooding in the Rantoul area comes from a variety of sources. However, there is a definite trend toward more extensive use of brine from the second break, 200 ft into the Mississippi lime at a total depth of about 1,100 ft. An unlimited supply of water with uniform characteristics can be obtained from this reservoir. There has been some complaint regarding the corrosive effect of brine. But one operator who treats brine so as to have a pH of 7.3 to 7.6 says that he has had no trouble with his distribution lines in 2 years. Brine has certain advantages for flowing due to its higher specific gravity; furthermore, where brine is used there seems to be less trouble with emulsions. However, there are certain considerations which favor fresh water in some cases. If a plentiful supply of water can be obtained from a river or stream, the expense of drilling a well for brine can be avoided. Two water-flood operators procure treated water from municipal waterworks at low rates; water from one waterworks system is delivered at 80-lb. pressure.

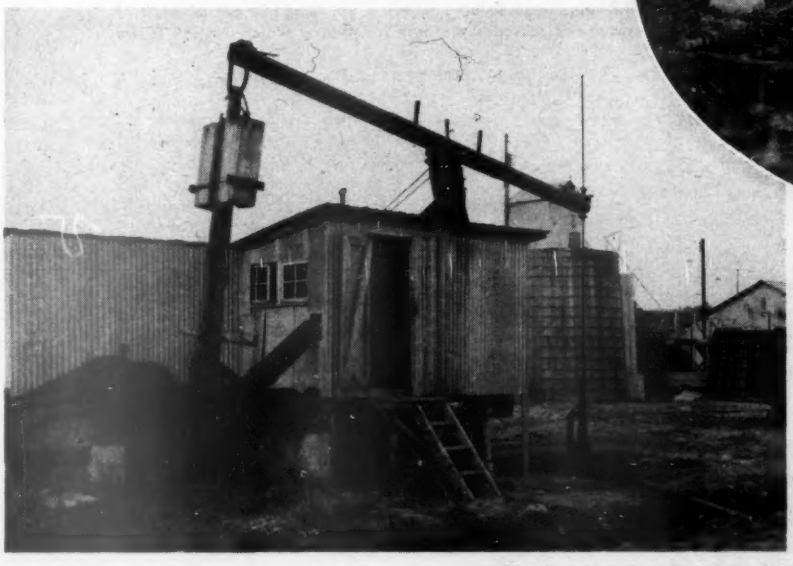
Sources of Water

The original flood project in the Rantoul area started off using brine pumped by oil-field jacks from the 190-ft. sand; this brine went directly through pipe to the input well without exposure to the air; there was no filtering or treating. After several years of operation in this way, it was found that it was necessary to adopt a system which would make it possible to inject larger quantities of water. The present method of this operator is to jet fresh water from a gravel bed at a depth of 40 to 50 ft. by operating an air compressor at 70-lb. pressure. The water goes to an open tank where it is treated with copper sulfate to eliminate algae before it is pumped to input wells for injection into the first and second sands.



***Right:** At an input well serving three shallow sands, water for each of the three strings of pipe in the hole is metered as it goes from water line to braden-head connections*

***Below:** Beam well-pumping equipment driven by electric motor for lifting brine for flooding purposes from Mississippi lime*



East Texas Salt-Water-Disposal Project May Set Pattern for Future

by Harry F. Simons

This is the second of two articles on the recent history of the East Texas field, and how operators are going about the program of controlling the fluid withdrawals from the field. The article discusses the plans and equipment for the world's largest salt-water-injection project.

AFTER some preliminary shadow boxing with the problem, operators in the East Texas field came to the conclusion that the cheapest and most effective method of getting rid of the salt water produced with the oil from the Woodbine sand was its return to the Woodbine formation. A number of companies installed their own systems and began putting the water back, realizing that the individual injection systems would at least be partially effective until a comprehensive cooperative plan could be worked out.

The individual company systems are handling approximately 87,000 bbl. of salt water per day and putting it back into the formation through 45 injection wells. One of the difficulties is that the salt-water problem is a dynamic one and as the water encroaches from west to east through the field, the facilities must change and either new injection wells must be selected and the plant moved or additional gathering lines must be laid.

To solve the problem for the life of the pool, the East Texas Salt Water Disposal Co. was formed by operators in the field, and while the cooperative system for disposing the salt water is not uncommon, this organization is the biggest and most comprehensive of its kind.

Briefly, the company was capitalized for $2,000,000, the 249 stockholders being companies and operators in the field. The object of the company is to reinject the water into the formation, making enough money by charging for its services to pay the operating expense and retire the investment. The water is injected for a flat fee of $0.018 per barrel and the disposal facilities are made available to all operators alike, whether they are stockholders or not.

Even at the above charge the reinjection of the salt water pays for itself in many cases due to the bonus permitted by the Railroad Commission of 1 bbl. of oil for each 50 bbl. of salt water injected. Injection of the 50 bbl. thus costs $0.90 and the operator receives $1.25 for the extra oil which he is allowed to produce. This leaves $0.35 out of which to pay the royalty, taxes, and operating expense and realize a small profit. The oil allowable obtained can be produced from the same lease of the operator, transferred to another lease or transferred to another operator, who may be willing to produce the oil. A recent amendment by the Railroad Commission permits anyone to inject the water for the operator.

Officers of Company

Officers of the East Texas Salt Water Disposal Co. are: Bryan Payne, president; W. S. Morris, vice president; J. H. Moyer, Stanolind Oil & Gas Co., secretary and treasurer. The executive committee is composed of the following: David Frame, Humble Oil & Refining Co., Houston; E. H. Blum Atlantic Refining Co., Dallas;

Four of the battery of eight filters at the District 10-B plant site being connected up. Concrete pit at back of filters is for backwashing. Centrifugal pump in foreground provides pressure for putting water through filters

Part of the staff of the East Texas Salt Water Disposal Co., W. S. Morris, vice president and general manager; L. H. Dial, superintendent; W. B. Doty, field engineer; Hick Files, warehouseman, and Roy Copeland, field foreman

John G. Pew, Sun Oil Co., Dallas; Joe Zeppa, Delta Drilling Co., Tyler; J. H. Moyer and Mr. Payne.

W. S. Morris is in active charge of the company, including the installation and operation of equipment. A staff of petroleum, salt-water, and civil engineers was employed to carry out the work. The staff includes the following: L. H. Dial, salt-water engineer (Stanolind); R. J. Bethancourt, electrical engineer (Sun); Roy Copeland, field foreman (Gulf); J. L. Dellinger, pipe-line superintendent (Delta); Joe W. Hart, civil engineer; A. J. Stalcup, construction engineer; F. R. Files, material man.

Operating offices are maintained in Kilgore, with an executive office in Tyler with Ray Merrill as office manager. Mr. Merrill is also assistant secretary-treasurer of the company.

Operating Difficulties

Injection of the salt water amounts practically to a second-recovery project as the returned water will maintain the natural-water drive which is forcing the oil upward and out. The rate of water influx is approximately 625,000 bbl. per day under present pressure conditions, as shown in a preceding article (The Oil and Gas Journal, January 28, 1942, page 175) and if all the water is returned the oil withdrawal may be at that rate or 550 bbl. per day. Maintaining the natural-water drive will be much more effective than depleting the field of its reservoir pressure and producing less ultimate recovery under less efficient operation.

Another eventuality to be considered is the exhaustion of the incoming water, something which has happened in other water-drive fields. While it is not expected in East Texas, it is a possibility which might cause the loss of a huge quantity of oil.

The plan is eventually to inject all salt water produced in the field into the Woodbine sand, but putting the plan into operation is naturally slowed by the war effort which prevents or delays the obtaining of equipment. Consequently, the plan will be effected through units, all being part of the system and each going into operation as soon as completed.

The original plan called for the conversion of a number of producing oil wells to salt-water injection wells and the drilling of new injection wells on the west or lower side of the field. This was changed due to the difficulty of obtaining materials (the company has AAA for some of its material but must wait until Army and Navy requirements are satisfied) in time to fit the plan with the water-oil ratio order of the Railroad Commission which made a step up in the rate of injection necessary. By converting wells instead of waiting for ones to be drilled, it may be possible also to reduce the gathering system and raise the injection rate up to about 110,000 bbl. per day by February 1 instead of the 50,000 bbl. which had been the objective.

List of Wells

The following salt-water-injection wells having excess capacity were either purchased or arrangements made to utilize them to the fullest:

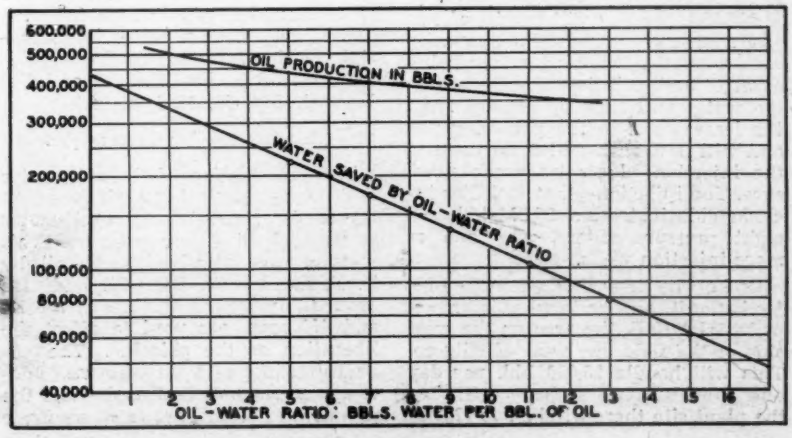
Sun 1 T. C. Ramey	5,000
Shell 9 J. S. King	5,500
Tide Water 18 T. Bell	6,000
Tide Water 16 Nicholson	3,000
Sinclair 5 H. J. Thomas	5,000
Sinclair 21-B Mayfield*	3,000
Sinclair 14 Tips*	800
Sinclair 9-C Bunch-Wilson*	6,000
Gulf Florey System*	6,000
Gulf Trimble System*	6,000
Gulf Allen-Douglas System*	6,000

*Delivering to excess capacity.

Already converted or in the process of conversion are the McMahon 5 Cook, Olson 7 Wolford, Humble 2 Joiner, and the Humble 3 Kee. Four other additional wells may be converted and it is hoped that 35,000 bbl. capacity can be picked up in this manner. The wells acquired above were not fully loaded and the amounts shown are additional amounts to be put into the Woodbine formation.

One of the difficulties from the start has been the topography of the area. While the Woodbine sand is lowest on the west and highest on the east, the surface condition is reversed and the west side is higher. Consequently, an all-gravity system was out of the question, particularly if the water was to be injected on the west

Chart of water saved by oil-water ratio and oil-production rate at various oil-water ratios



Shallow trough permits some aeration before salt water gets into skimming pit. Reinforcing for dividing wall in place with cement yet to be sprayed on. Chlorinating chamber is a small pit, about 4 ft. by 4 ft., between receiving pit and main storage pit. This is an intermediate gathering point

side of the field outside the producing limits.

Fortunately, salt-water injection is not new in the East Texas field and consequently the selection of the best possible system for the cooperative project was simplified. The major problem in salt-water injection in East Texas is the prevention of the growth of bacteria which reduces the sulfates in the water and form a sulfide sludge that plugs the injection zone in the well bore. Chlorine has been found to be satisfactory for this purpose.

Because a large number of operators would be delivering salt water to company lines for injection, use of a closed system was not thought feasible. Simplicity was also necessary and desirable.

System Selected

The system selected consists of aeration, chlorination, more aeration and settling, flitering and finally gravity injection into the Woodbine sand. A typical system for handling 25,000 bbl. per day will consist of two gathering pits of 12,000 bbl. capacity each with the incoming water being aerated and chlorinated. Generally, the water will flow by gravity from the lease tanks to the gathering pits and will be transferred from them to the injection plants by pump pressure. The injection-plant facilities include chlorinators, a 25,000-bbl. pit, eight pressure filters, and one or more injection wells.

One of the first wholly complete injection units will be in what is known as District 10-B, the area on the west side of the field due west of Kilgore. This will handle 25,000 bbl. per day and will have two gathering pits. At the plant site there will be two 12,000-bbl. pits, two chlorinators, eight pressure filters, and two or possibly three, injection wells. This first treating plant is located on the Salt Water Co. fee lease out of the Asa King tract in the Chisum Survey. The first injection well drilled is the 1 Bryan W. Payne, appropriately named after the salt-water-disposal company's president.

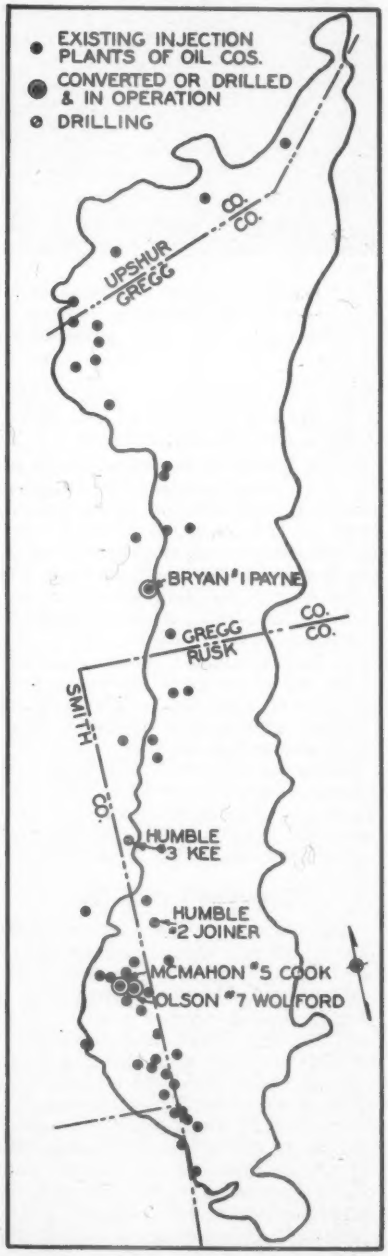
A slightly different arrangement is being used in another case where the salt water in being delivered to a company outside the cooperative for injection in one of its wells which has an excess capacity. Facilities in this case consist of a 7,000-bbl. concrete pit and a chlorinator, located on the Brightwell lease in the R. W. Smith Survey, Rusk County. About 6,000 bbl. per day will be handled through this system. Another similar system serves the Dainwood-Penn surveys, and a third system, the Campbell, Daniels, Shaw surveys.

All of the pits used by the Salt Water Disposal Co. will be lined with 2¼ in. of Gunite concrete. This type of construction requires no forms, is denser and hence requires less material, is cheaper and can be applied more quickly. (See The Oil and Gas Journal, Jan. 21, 1943, p. 34.)

Chlorination by Electrolysis

The chlorination of the salt water will be by electrolysis where direct current is passed through a salt-water stream releasing free chlorine. (This method was described in detail by T. P. Sanders in The Oil and Gas Journal, July 23, 1942.) About 7 volts and 400 amp. are used to effect the liberation of the chlorine. The capacity of the cells to generate chlorine is dependent on the size and the number of plates. The plates are made of graphite and are 1¼ by 6 by 30 in. and four of them will give sufficient capacity for 5,000 to 6,000 bbl. of salt water daily. The current necessary for the chlorination will be provided by direct-current generators driven by internal-combustion engines or by motor-generator sets. Internal-combustion engines used for this purpose are 15-hp. output.

The chlorinators are located just ahead of the large aeration pits, sometimes in conjunction with, but separated from, a skimming pit which removes any oil from the salt water.



Outline of East Texas pool showing location of oil-company injection wells and wells drilled or converted by the East Texas Salt Water Disposal Co.

The final filtering will be in pressure filters operating at low differential. These filters consist of assorted sand and gravels specially selected. Facilities for backwashing the filters consist of pumps and the necessary connections to change direction of flow.

Meter Water

Separation of salt water from the oil in the East Texas pool is a relatively simple problem, a minimum of heat, chemical and settling being required. As the water is being handled on a fee basis, meters are installed on the gun barrel of each tank battery delivering into the disposal system. These meters vary in size from 1¼ to 4 in. Originally, it was intended to use bronze but it was soon learned that not enough bronze meters of the proper size would be available so cast-iron meters are also being used.

Gathering lines consist of cement-asbestos pipe, composition fiber pipe, and cement-lined steel pipe. The composition fiber pipe is used at the heads of the gathering systems where the pressure is low. The sizes range from 4 to 6 in. After the pressure increases in the line, the cement-asbestos pipe is used in Classes 50 to 100. (The class denotes the pressure in pounds per square inch which the pipe will withstand.) From gathering points to the central injection plants, cement-asbestos pipe of Class 200 is used. The pressure lines are thus capable of handling a head of approximately 400 ft. Sizes of the cement-asbestos pipe used in both gathering and pressure lines range from 4 to 12 in. The cement-lined steel pipe is being used in 4-in., 6-in., and 8-in. sizes to complete lines.

The cement-asbestos pipe utilizes a different type of coupling from that normally seen. Actually, it is a Dresser sleeve coupling with the sleeve made from the asbestos-cement material. Thin rubber gaskets, cast-iron rings and cast-iron bolts are used to effect the seal.

Where pressure is necessary to transfer the salt water, centrifugal pumps, or vertical turbine pumps are used. Capacity of these pumps ranges from 6,000 to 12,000 bbl. per day, and they are driven by 25 and 50-hp. engines.

Manifolds around the pumps and filters are made from cast-iron pipe, fittings and valves. The pipe and fittings have cement linings, but it is impossible to thus protect the valves. These are of the lubricated-plug type and it is intended to replace them with new ones when they are no longer fit for service.

Injection Wells

Injection wells in the East Texas field will handle up to 15,000 bbl. per day by gravity as the Woodbine sand is an almost ideal zone in which to inject water, having an average porosity of 25 to 28 per cent and a permeability of 1,500 millidarcys or higher. The sand is also fairly uniform in thickness.

Completion of new wells or conversion of old ones calls for complete penetration of the sand so that injection in the bottom of the pay zone will be possible. Approximately 100 ft. of sand will be exposed in the injection wells. The holes are underreamed to 8-in. diameter. It has been found that when injection wells show tendency to take less water they can be backwashed the same as a filter by gas-lifting the water out of the well and causing a reversal of flow. For a time the salt water produced will carry with it a sludge (believed to be a sulfide) but will gradually become clear. Injection is then resumed and generally the well will take water as well as it did originally.

Some of the wells are completed by reverse circulation method to prevent mud from plugging the sand. The wells are also put on water production, using gas lift, for a short time to assure their being clean.

Cement-Lined Casing

New wells are equipped with 7-in. cement-lined casing set and cemented in the top of the sand. An alternate method is to set and cement 7-in. steel casing and run 5-in. cement-lined tubing inside it. (This is used also on old wells being converted to injection wells.) The 5-in. tubing is set on a packer for the dual purpose of supporting it and shutting off the salt water from contact with the steel casing, thus preventing corrosion.

While the company for the injection of the salt water was organized to operate as long as the field exists (of an original reserve of 5,000,000,000 bbl., approximately 1,750,000,000 bbl. have been produced, thus leaving a future life of about 20 years) there is no way of determining exactly the amount of equipment to be needed for the job. This is due to the inability to predict exactly where equipment will be needed and when. Ultimately from 300,000 to 400,000 per day will be reinjected. The company will operate on a flexible plan which will allow it to meet situations as they arise. Gathering facilities will have to be extended as the west side of the field is flooded out and the water zone moves eastward. Each major gathering and disposal unit of the system will be installed as a separate project.

Enormity of Project

The handling of the problem, as far as the volume is concerned, is similar to providing water for a city of 150,000 population having 25,000 dwellings. It is the largest project of its type ever attempted and will require large quantities of the equipment discussed here. It will also be an outstanding contribution to the recovery of oil from water-drive reservoirs and if it is as successful as conservative estimates indicate, it will set the pattern for the operation of future similar pools.

Editor's Note: The first article in this series, which is completed here, appeared in the issue of January 28, 1943, page 175.

Salt-water pit on Brightwell lease, R. W. South Survey, Rusk County. This went into operation December 10. Salt water is gathered at this point, aerated and chlorinated and delivered to another company which has excess capacity for injection

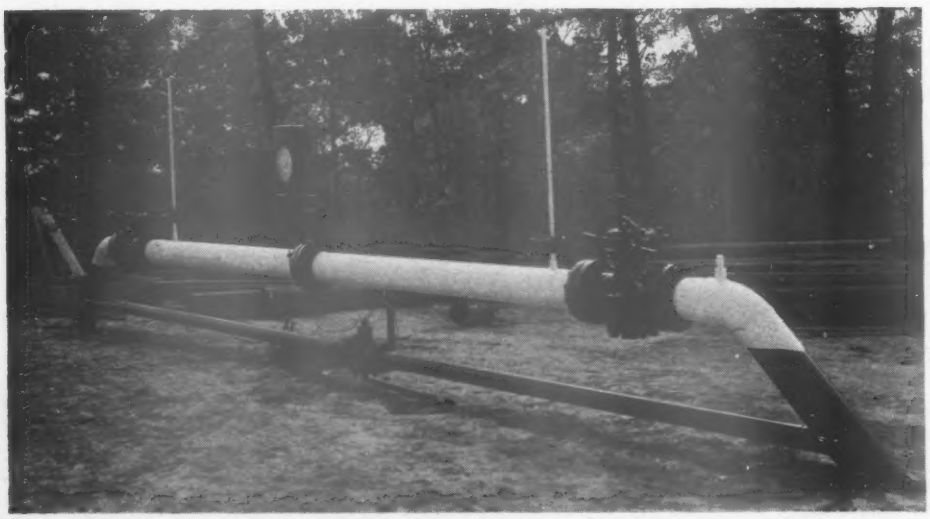
PLANT PRACTICES

Straddle-Type Truck Useful at Refinery

THIS rather unusual looking vehicle is now being used by the Standard Oil Co. of New Jersey at its Bayway, N. J., plant. The carrier is a combination lifting and straddle-type truck. It straddles a load up to 72 in. in height, lifts it clear of the ground, and carries it to the desired location. It is capable of lifting a heavier load but its maximum capacity as it has been adapted by the mechanical department at Bayway is limited by the capacity of the tires to 5 tons. The carrier is used for picking up, hauling, and depositing heavy timbers and scaffolding materials, for picking up concrete construction forms at the carpenter shop and delivering them directly to the job, in handling steam-line supports and other structural steel columns throughout the refinery and in handling and hauling heavy fittings and castings, etc., from the machine shop. In the picture it is shown hauling a load of scrap in the refinery scrap campaign. Normally carriers of this type are used in logging or in lumber yards and by stevedore firms for loading and unloading cargo vessels.

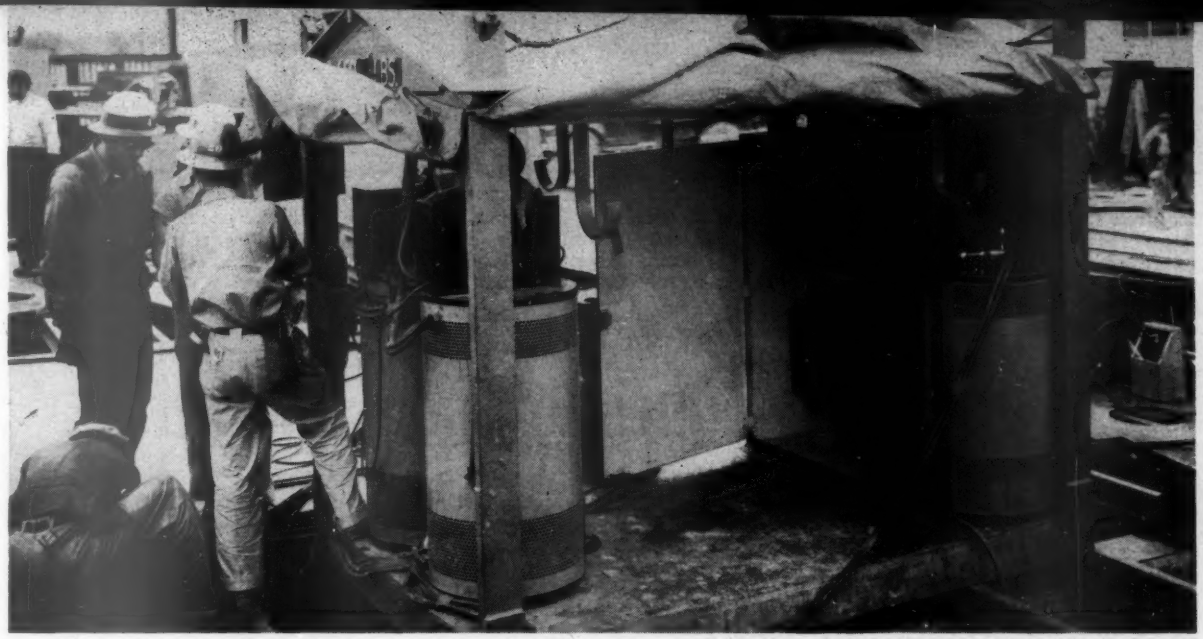
Liquid-Level Connections To Pass Foreign Matter

LIQUID-LEVEL controllers are likely to be the location for accumulation of water, gum, paraffin, basic sediment, and emulsified substances. During cold weather these accumulated substances often become so viscous that they prevent the float from accurate actuation. Failure of float on an absorber to work properly at a gasoline plant might cut circulation of absorbing oil entirely or might allow gas to pass out of the bottom of the absorber and cause discoloration of the finished product. In this hookup the liquid-level control is connected directly into a tee connection on the oil-discharge line so that any foreign matter that might get into the controller will settle to the bottom and pass into the moving oil stream. It also has the added advantage of having about the same temperature as has the oil discharging from the absorber. The installation described here is in a Mid-Continent gasoline plant.



Bleed Lines on Meter Setting

AN operator in Illinois has installed small bleed lines on each side of the orifice in a meter setting, as shown in the picture. These lines permit releasing the pressure on the horizontal section of pipe, after the setting is cut out of the system. The lines are shown as risers near each cutoff valve, and are equipped with tight, well-conditioned valves. Each line is equipped with a small gate valve for manual control.



Alternating-current welding equipments such as those shown here were applied extensively in 1942, particularly in shipyards

1942 Developments In Electric Arc Welding

by R. F. Wyer*

Waste reduction, conservation of power, employment of women and better protective clothing featured progress

IN 1942, as in 1941, there were more notable developments in the field of arc welding operations than in new equipment or processes. Welding operators and supervisors deserve the praise of the industry for their almost incredibly effective performance in the battle of production.

The enormous expansion in the use of arc welding was aided in a large measure by the conservation activity of operating men which resulted in savings of electrode, time, electric power, and equipment. These savings contributed to greater production of war tools just as surely as did expanded production facilities.

For example, many plants instituted intensive campaigns to reduce waste in electrode stubs, some adopting the plan of checking returned stubs for number and length before issuing new electrodes from the stock room. By this means, production per pound of electrode consumed was increased as much as 20 per cent.

Conservation of Metal

Stress was placed on the importance of good fit-up of joints in conserving deposited metal, and of proper adjustment of welding current and arc voltage to reduce spatter loss. The skill and cooperation of welding operators in avoiding oversized fillets and excessive reinforcement helped still further in saving electrodes.

Savings in time were accomplished by the use of larger electrodes where practical; in many cases such use of larger electrodes resulted in an increase in production per hour of as much as 33 per cent. This trend also helped to alleviate the electrode shortage by making possible the production of greater tonnages of electrodes with existing production facilities. Higher duty factors through the reduction of electrode-changing time further contributed to increased production.

Power was conserved through the more efficient use of welding machines and through the greatly increased use of alternating-current

Animation from welding-operator-training motion picture, "The Inside of Arc Welding," showing weld metal piling up to form arc-welding bead. More than 2,000 reels of this all-color G-E film are now at work, training operators for Allied war production work

*Welding Engineer, General Electric Co.

welders with a consequent reduction not only in the energy consumed but in the copper wire and other facilities required to deliver the energy. The latter reduction was augmented by improved arc welding load power factor through the use of capacitors built in or attached to arc welding equipment. A further part in conservation was played by increased stress on the maintenance of arc welding equipment and accessories.

Women Invade Field

Among the outstanding developments in 1942 were the employment of women as arc welding operators and the use of improved methods for the mass training of enormous numbers of new operators. The latter effort was marked not only by the establishment of fully equipped welding schools by individual fabricators, but also by the widespread use of motion pictures to shorten the time required for training.

The past year witnessed a broad expansion of the use of previously developed equipment and processes. This was in line with the well recognized necessity for standardization and avoidance of special requirements in achieving maximum productve efficiency. The application of atomic-hydrogen arc welding was largely extended in the aircraft field where such parts as propellers, landing gear parts, superchargers, and oxygen cylinders were produced in large volume with the aid of atomic-hydrogen arc welding. A new multiple-arc automatic atomic-hydrogen arc welding head went into production in 1942 for the high-speed welding of heavy-walled tubing.

Another notable development in the application field was the large increase in the use of alternating-current arc welding equipment, and particularly its adoption in the shipbuilding field. Its use out-of-doors on subassembly work as well as in ship repair docks gives another strong indication of its almost certain widespread adoption in this field in the future.

Control Equipment

There was a significant increase in the use of control equipment on single-operator welders for facilitating the filling of craters as well as for providing increased welding heat at the start of a weld, particularly on thin materials.

The resumption of development work for arc welding in atmospheres of inert gases, such as helium and argon, is particularly noteworthy. The process was commercially applied to the welding of magnesium, aluminum and the stainless steels.

In the electrode field, a long period of intensive development work culminated in the production of a Class E-6011 electrode for alternating-current welding in all positions, particularly the vertical and overhead positions. In conjunction with Class E-6020 electrodes, this electrode provides complete flexibility for the use of alternating-current welding on mild steel, and is therefore a very important contribution to productive efficiency.

Accessories were developed to keep pace with the needs of the industry, the most noteworthy addition being a line of protective clothing for women welders.

Questions on Operation

Question. How many cubic feet per day should a 11½ by 20-in. compressor handle when it is driven by a 25-hp. engine which runs a little slow? The gas is delivered at 25 points vacuum.—N. B. R., Bowling Green, Ky.

Answer: The capacity of a compressor depends on the length and diameter of the piston and cylinder, the number of strokes per minute, the clearance and the compression ratio. One can calculate the theoretical volumes and the theoretical horsepower required very easily but they will be very high and will have to be reduced considerably.

There was no mention of the speed at which the compressor is operated so an arbitrary one of 125 r.p.m. has been selected. It is also assumed that this is a single acting compressor. Theoretically the compressor should handle 216,000 cu. ft. per day.

Actually, the effective area of the piston is less than the calculated area, the clearance affects the volume handled and so does the compression ratio. On many average compressors the clearance may be considered as 12 per cent and the effective piston area as 101.88 sq. in.

Volumetric Efficiency

A discharge of 1 lb. gage (15.6 lb. abs.) gives a compression ratio at the intake you give of 6.5. The volumetric efficiency becomes 50 per cent and a further deduction must be made to correct the inlet pressure to the correct base. The delivery then becomes 17,400 cu. ft. per day. Following are the outputs for the compressor at different compression ratios:

Discharge pressure lb. gage	Compression ratio	Vol. efficiency per cent	Cu. ft. /24 hr.
1	6.5	50	17,400
5	8.15	42	14,700
10	10.25	35	12,250

A change in the clearance will affect materially the output of the compressor. When the compressor is in good condition the clearance should be about 5 per cent in which condition the compressor should deliver the following

Dis. pressure	Ratio	Vol. eff.	Cu. ft /24 hr.
1	6.5	66%	23,300
5	8.15	59.5	20,800
10	10.25	52	18,200

If the compressor is double acting the above may be increased 80 per cent to find the output.

The horsepower required may be computed by the formula:

$$\frac{\text{M.e.p.} \times L \times A \times N}{33{,}000 \times 0.80} = \text{Hp.}$$

M.e.p. = mean effective pressure
L = stroke in ft.
A = area piston in cu. in.
N = No s.p.m.

This is summarized in the following for three discharge pressures.

Discharge pressure (gage)	Horsepower required— Single acting	Double acting
1	4.6	9.2
5	5.4	10.8
10	6.1	12.2

The above includes a 3 per cent deduction for belt slip.

A further point, and one which is of primary importance, is the heat produced by the compression of the gas which is really the controlling factor in the delivery pressure. Three to five compressions are considered standard practice although some compressors are run at ratios up to and beyond 10 : 1. However, a compressor which is run at ratios above 8 : 1, or above eight compressions, generally gives considerable valve and ring trouble as the temperature is excessive.

The heat can be calculated from the fundamental equation,

$$P_1V_1/T_1 = P_2V_2/T_2$$

in which case both pressure and temperature are absolute (14.6 lb. being added to the gage and 460° to the thermometer reading). It can be assumed that the intake temperature is around 90° F. which would bring the discharge temperature to around 496° F. Some of this heat would be dissipated by the cooling system, but the temperature would still be too high for operation.

From the above data and with the assumptions as to the condition of the compressor, a rough estimate of the output would be around 20,000 cu. ft. at a discharge pressure of 5 lb. per sq. in gage if it is a single acting one and about 37,000 cu. ft. if double acting.

It Can't Be Done?

Step by step the forbidding sentence "It can't be done", is being erased from chemical thinking

For instance:

Chemistry textbooks for generations had taught that only a few limited fractions of petroleum could produce the 100-octane gasoline needed in unlimited volume by our fighting flyers

That belief didn't even slow up Universal research men They went ahead, discovered principles and developed new processes that multiply production of the precious aviation motor fuel in the very ways believed impossible

And that isn't all They developed processes to make the components of synthetic rubber from petroleum, too—better rubber than trees ever grew

So we will be freed forever from dependence on rubber trees, 10,000 miles from home

It's mighty lucky for our fighting men—for all of us—that Universal research men did not stop at the barrier marked—

"It can't be done."

OIL IS AMMUNITION—USE IT WISELY

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

THE REFINERS INSTITUTE OF PETROLEUM TECHNOLOGY

QUESTIONS on TECHNOLOGY

by W. L. Nelson

This department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products. Readers are invited to submit their problems to W. L. Nelson, technical editor. Questions should be submitted in as much detail as possible. Inquiries must be signed, but only the given initials will be printed. The source of the question is considered to be confidential. Questions requiring a discussion of patents, extended computations, or a detailed study cannot be considered. When the matter is of general interest, a reply will be published within a reasonable time.

W. L. NELSON

Improving Lead Susceptibility for Aviation Gasoline

We read with interest your article in the October 22 issue entitled, "Desulfurization for 91-Octane Manufacture." Among the four methods of raising the octane rating, you mention only one chemical method, i.e., catalytic desulfurization. Perhaps your discussion would have been more complete if you had referred to the Solutizer Process which often results in a very material improvement in the lead susceptibility.—B. A. F.

The title of the Questions in Technology item referred to above was unfortunate inasmuch as the thought behind the article pertained more to the general problem of attaining a high enough octane number to permit aviation gasoline manufacture, than to the particular effect of desulfurization. The Solutizer Process is widely recognized as a method of improving lead susceptibility.

The main means of improving the lead susceptibility of a gasoline by the removal of sulfur are:

1. Caustic washing.
2. Solutizer and related processes.
3. Catalytic desulfurizing and similar catalytic treating processes.

It will be noted that several of the customary sweetening processes (doctor, etc.) are not mentioned. These processes merely convert the sulfur from one form to another and may in some cases impair the lead susceptibility. Likewise, the classic treatment with sulfuric acid is not mentioned because it not only removes sulfur but certain types of high octane-number hydrocarbons. The three methods of sulfur removal have been discussed on these pages and references to them appear at the end of this item.

Caustic washing, except for gasolines that contain only small amounts of mercaptan sulfur, is not usually considered to be as effective a method as methods (2) and (3). By using several contacts or washings and by regenerating the caustic by heating and stripping, a suitable system can be devised but if such an expense is to be incurred, it is usually advisable to adopt the Solutizer Process. This process involves the use of a caustic solution which contains such chemicals as sodium isobutyrate that greatly increase the solubility of the sulfur-bearing (mercaptan) hydrocarbons in the caustic solution. By this process the sulfur content can be reduced by the amount of mercaptan sulfur that is present in the gasoline.

According to the paper entitled, "Solutizer Process for Sweetening Gasolines," by L. E. Border in The Oil and Gas Journal of July 18, 1940, that lead susceptibility improvement (using 3 cc. TEL) ranges from none for certain stocks to as much as 2.5 octane-number units for a gasoline whose total sulfur content was decreased by 86.5 per cent. Somewhat the same or a little larger improvement can be expected by the use of catalytic desulfurization. A small loss is caused by the mild rearrangement or decomposition that occurs in the process but the sulfur content can be reduced to such extremely low figures as 0.006 per cent and most types of sulfur compounds as well as mercaptans, can be removed. In any particular instance, however, the gasoline must either be tested by the above processes to discover the exact improvement in lead susceptibility that will occur, or an elaborate analysis for the exact types of sulfur compounds must be undertaken. A few gasolines have shown little improvement regardless of sulfur removal, which would indicate that not only the type of sulfur removal is important but also the types of hydrocarbons which compose the oil.

The costs of the equipments for the three methods are in the same general order as their effectiveness in improving the lead susceptibility, namely, caustic wash, Solutizer and catalytic. This means that any of the processes may be most suitable for a specific gasoline depending upon its reaction to the several processes and the degree of improvement that is necessary.

References

References to other Questions on Technology:

1. Solutizer Sweetening Process, p. 97, Oct. 10, 1940.
2. Sulfur Removal by Caustic Washing, p. 195, Jan. 30, 1941.
3. Steam Requirement for Caustic Regeneration, p. 63, Feb. 20, 1941.
4. Typical Lead Responses, pp. 68, 70, Nov. 27, 1941.
5. Desulfurization for 91 Octane Manufacture, p. 56, Oct. 22, 1942.

Define Copolymerization

In your recent topic entitled, "Polymerization of Butadienes Into Synthetic Rubber," you use two terms, polymerization and copolymerization. What is copolymerization?—P. H. J.

Copolymerization is a polymerization reaction which involves the combination of three or more molecules of at least two different kinds. The product of such a reaction is referred to as a copolymer rather than a polymer.

The above definition might be confused with, and is quite similar to, the definition of a codimer as given on page 44 of the August 27 issue of the Questions on Technology page. A copolymer differs from a codimer in that a copolymer is formed from three or more molecules whereas a codimer is the product of just two molecules. Both copolymers and codimers are formed by the reaction of two kinds of molecules.

ADEQUATE RECORDS NECESSARY FOR CONTROLLING EXPENSE

THE analysis of the expenses of operation and efforts to reduce costs presupposes an adequate set of records from which the history of previous operations may be determined. Such records make possible a direct attack on the problem as they indicate the kind and the amount of the various charges and any unusual digression is immediately noticed.

Another major benefit of an adequate record system is the ability to determine what is a profitable price for the work in any particular area and a basis for close estimation for work in an unfamiliar territory. Unless ample history is available, the one making the estimate can only guess, with poor results in any case. If the estimate is too high, a profitable contract may get away and if it is too low the contract is obtained but money is lost on the job.

Many drilling contractors have developed systems for recording the cost information on wells drilled by their rigs. The system used by one contractor includes a sheet for making estimates on each contract on which a bid is made and another for recording the cost of each job. In case there is any great discrepancy between the estimate and the actual record on any job an explanation of the causes must be set out.

The record sheet is specially ruled on both sides of a page approximately 14 by 10 in. The particular job is identified by the company, lease, well number, county, and state and the number of the rig doing the work. The heading also includes the date on which work was started, date work ended, total depth, contract depth, contract price and day-work rate. A separate bracket is provided for the total days elapsed, total hours elapsed, total days operating, and total hours operating for both rotary tools and cable tools.

The record of costs is kept by assigning a number to each charge as well as identifying it by name and separate columns in which direct charges for each item, the charge per foot, the charge per day elapsed, and the charge per operating day may be entered. By using one of the three functional factors, what would ordinarily appear to be an ordinary direct charge may show up as being excessive.

The various categories are divided into two main groups, those which are always present regardless of what type contract is made and those expenses which may or may not be borne by the contractor. Under the former come:

1. Labor
2. Supervision
3. Compensation and Liability Insurance
4. Fire, Boiler, and Other Insurance
5. Rig Supplies
6. Oils and Greases
7. Trucking and Transportation
8. Engine Parts and Repairs
9. Draw Works and Catchead Parts and Repairs
10. Brake Lining and Braking Expense
11. Chain and Transmission Expense
12. Rotary Parts and Repairs
13. Rotary Pump Parts and Repairs
14. Swivel Parts and Repairs
15. Rotary Hose and Clamps
16. Boiler Parts and Repairs
17. Valves, Fittings, and Line Pipe
18. Electrical Equipment Parts and Repairs
19. Small Hand Tools
20. Wire Line Expense
21. Machine Shop and Welding Expense
22. Drill Pipe Repairs and Expense
23. Blowout Preventor and Pressure-Control Equipment
24. Direct Auto Expense
25. Bit and Reamer Expense
26. Fishing and Fishing-Tool Expense
27. Equipment Replacements
28. Tax
29. Miscellaneous.

Charges which may or may not be present, depending on the type of contract made, include:

100. Derrick and Rig Expense
101. Fuel
102. Water
103. Casing and Tubing Expense
104. Pits and Dirt Work
105. Mud and Mud Conditioners
106. Coring and Coring Expense
107. Tankage, Separator, and Lines
108. Roads, Bridges, Clearing Land.

By totaling the direct charges for the particular well and deducting the charges for equipment replacement the net direct charge is obtained.

Space is also provided for the direct, per foot, per day elapsed and per day operating charges for depreciation of both cable tool and rotary rigs and for the depreciation of 6⅝, 5⅛, 4½, and 3½-in. drill pipe. District overhead and general office expense is also broken down into the above categories and added in to obtain the indirect charges.

Revenue from the contract price per foot, the day work and the coring time are summarized and the direct and indirect charges deducted to obtain the profit. Space is also provided for listing details of the equipment replacements.

The reverse side of the sheet contains the personnel record under which each driller is listed, the total footage made by each, the number of lost-time accidents charged to each and the number of nonlost-time accidents of each driller.

Time distribution is broken down under each driller and totaled under each of the following subheads:

1. Number of days rigging up.
2. Number of man-hours rigging up
3. Drilling Days and Hours
4. Trips Days and Hours
5. Coring Days and Hours
6. Lost Time on Fuel (Days and Hours)
7. Lost Time on Water (Days and Hours)
8. Lost Time on Repairs (Days and Hours)
9. Lost Time on Weather (Days and Hours)
10. Waiting on Cement (Days and Hours)
11. Waiting on Orders (Days and Hours)
12. Lost Time, Other Causes (Days and Hours)
13. Tear Down and Stack Rig (Days and Hours)
14. Tear Down and Stack Rig (Man-Hours)
15. Watchman (Man-Hours)

The calculated efficiency is obtained by dividing the number of hours drilling by the total operating hours other than those charged for as day work or coring time.

The bit record carried on the sheet is a summary of the regular bit information including number used in each size, make, model, and the total footage drilled, average footage per bit, and the average drilling speed per hour. The drilling and casing record includes the size hole drilled to each depth and the size of casing run. Coring record includes number of cores taken with each make and type of barrel, footage cored, and the recovery in feet and per cent.

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COMPUTING RESULTS OF ANALYSIS

THE computation of gas analysis from test data taken as described in Installment 66 is based principally on vapor pressure data for the hydrocarbons as given in Fig. 1. By means of this set of curves each component can be identified by the temperature and pressure at which it boils.

The pressure on the fractionating column is held constant during the distillation of any given component, the boiling temperature, as read with the thermocouple, will remain constant. When a **cut point*** is approached the boiling temperature will tend to rise due to the predominance of the next highest boiling fraction. At such time a large amount of reflux and a slow rate of distillation into the measuring flasks is necessitated. Proper care in this transition range will result in a sudden rise in temperature when all of the lighter component has been distilled, and make the task of picking cut points simple. Thus, good data when plotted will yield a distillation curve with flat steps representing the volume of each pure component. Actually the points of this stepped curve will be

*Term used to designate point at which distillation changes from a given component to the one of next highest boiling point.

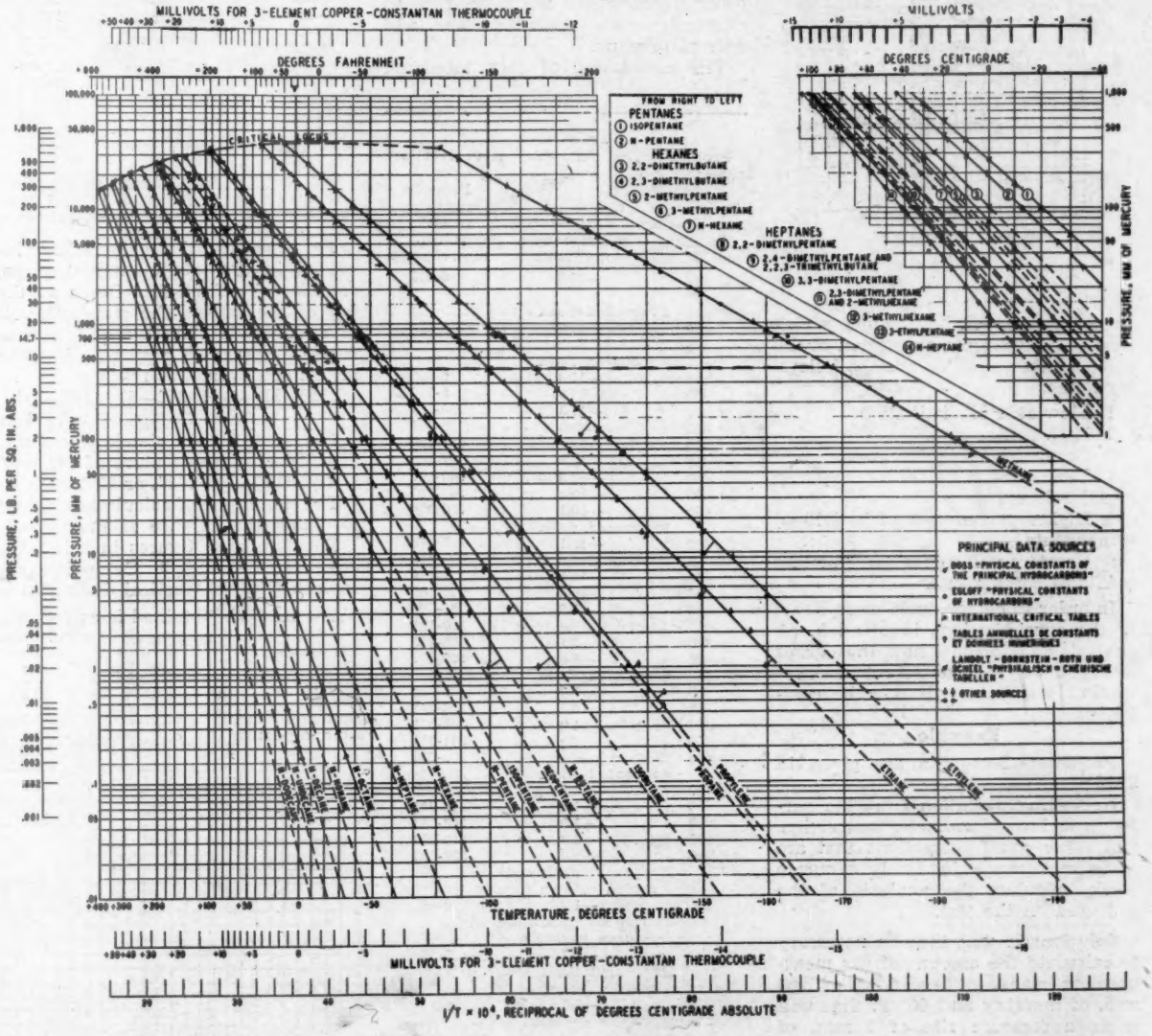

*Fig. 1—Vapor pressures of hydrocarbons**

*Reprinted from Bureau of Mines Information Circular 7215.

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somewhat rounded due to the impossibility of obtaining perfect separation of adjacently boiling components. Consider, for example, a mixture containing 60 per cent methane, 25 per cent ethane, and 15 per cent propane. The theoretically perfect curve and the actual curve that might be obtained as a result of low-temperature fractionation of this mixture at a constant pressure of 400 mm. of mercury absolute, is indicated in Fig. 2.

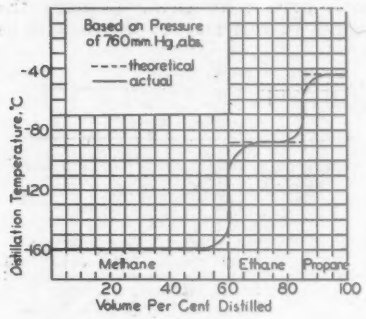

Fig. 2

A summation of the factors which tend to give sharper separation of the components would include the following items:

1. Slow rate of distillation.
2. High reflux rate.
3. Greater height of column.
4. Less amount of reflux required to fill column.
5. Higher percentages of individual components.
6. Greater difference in boiling points of components.

In order to demonstrate more clearly the considerations involved in an analysis and to show how the curves of Fig. 2 may be used, a set of hypothetical test data will now be computed.

Example

Problem: Test data are given in Table 1.

Neglecting deviation from the perfect gas laws, barometer correction, and other small corrections that are sometimes made in finely accurate work, calculate the analysis of the gas used on the test.

Solution: It will first be necessary to calculate the amount of gas measured at standard conditions of 760 mm. of mercury and 60° F. that will cause a pressure rise of 1 mm. of mercury in the measuring flask when at a bath temperature of 70° F. This may be done as follows:

$$5520 \times \frac{1}{760} \times \frac{(460 + 60)}{(460 + 70)} = 7.126$$

cc. at standard conditions

By referring to Fig. 1, the various distilled products can be identified as follows.

Follow the horizontal pressure line corresponding the fractionating column pressure (400 mm.) to the right until a point vertically above a millivolt reading of 15.0 is reached. (See dotted lines on Fig. 1.) It can be seen that this point indicates that the component is methane. Similarly, the other components are identified as ethane, propane, normal butane, and normal pentane.

The calculation of data tabulated below will facilitate the plotting of the results of the analysis.

TABLE 1

Problem: The following test data are given:

Pressure in fractionating column, mm. Hg, abs.	Reading on thermocouple, millivolts	Pressure change in receiving flask, mm. Hg, abs.
400	—15.0	5-375
	Evacuated flask	
400	—15.0	5-372
	Evacuated flask	
400	—15.0	5-380
400	—14.9	5-190
400	—14.3	190-195
400	—13.0	195-197
400	—12.2	197-198
400	—10.5	197-200
400	—10.3	200-207
400	—10.2	207-220
400	—10.1	220-375
	Evacuated flask	
400	—10.1	5-378
	Evacuated flask	
400	—10.1	5-175
400	—9.8	175-185
400	—7.0	185-190
400	—6.5	190-198
400	—6.1	198-220
400	—6.0	220-377
	Evacuated flask	
400	—6.0	5-350
400	—5.5	350-362
400	—4.0	362-371
400	—3.0	371-379
400	—2.1	379-388
	Evacuated flask	
400	—2.0	5-203
400	—1.8	203-208
400	+1.0	208-218
400	+1.9	218-230
400	+2.0	230-259
	Evacuated flask and cooled column	
100	—1.2	6-46
	Evacuated flask lowered column pressure	
20	—4.7	5-12
	Evacuated flask lowered column pressure	
5	—6.6	2-3

Flask temperature constant ..... 70° F.
Volume of measuring flask, milliliters . 5,520
Specific gravity of first product distilled 0.555

Thermocuple reading, millivolts (ordinate)	Cumulative volume, cc. (abscissae)
—15.0	7,924
—14.9	9,242
—14.3	9,278
—13.0	9,299
—12.2	9,306
—10.5	9,327
—10.3	9,377
—10.2	9,470
—10.1	13,731
—9.8	13,802
—7.0	13,838
—6.5	13,895
—6.1	14,052
—6.0	17,629
—5.5	17,715
—4.0	17,779
—3.0	17,836
—2.1	17,900
—2.0	19,311
—1.8	19,347
+1.0	19,418
+1.9	19,504
+2.0*	20,052

*All pentane included, even though some was distilled at a different column pressure and millivolt reading (temperature).

To illustrate the calculations involved in the tabulation just given, consider the first few items at the top of the table. The standard volume of product distilled at a constant temperature reading of —15.0 mv. is determined as follows:

$$7.126[(375-5)+(372-5)+(380-5)] = 7924 \text{ cc.}$$

The cumulative standard volume distilled at a temperature of 14.9 mv. is 7.126(190—5)+7924, or 9242 cc.

The same type of calculation is used to obtain the balance of the table.

The tabulated figures in this table are plotted in Fig. 3. Cut points are indicated by the vertical dotted lines.

The analysis obtained is as follows:

Component—	Molecular per cent
Methane	46.4
Ethane	22.7
Propane	19.7
Normal butane	8.0
Normal pentane	3.2

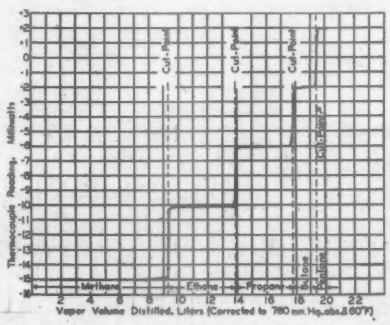

Fig. 3

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A FEATURE OF THE OIL AND GAS JOURNAL

No. 25

STANOLIND OIL & GAS CO.-
AMERADA PETROLEUM CORP. 1 BLEEKER
NW SE SW 28-10n-2e

CONTRACTOR
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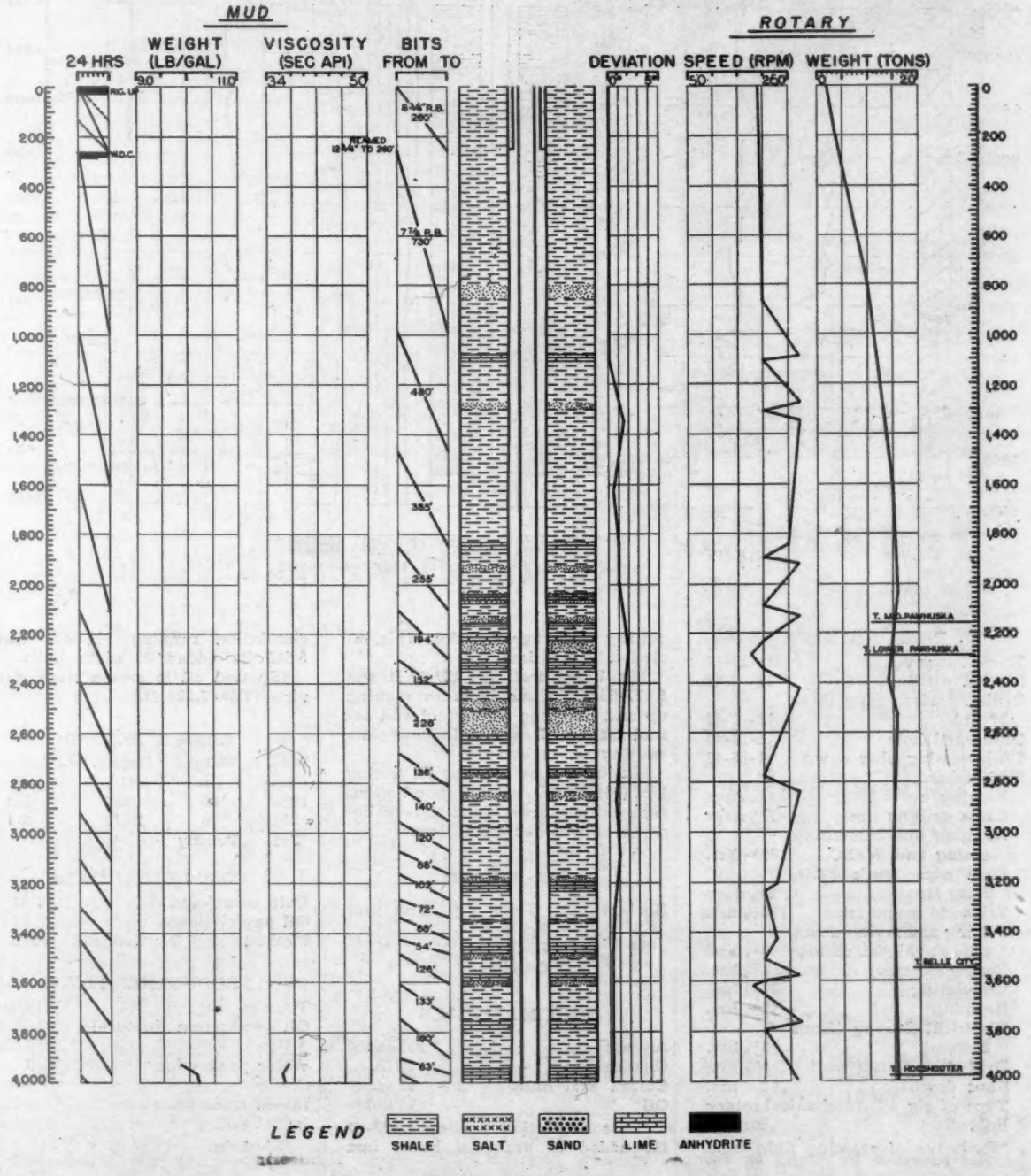
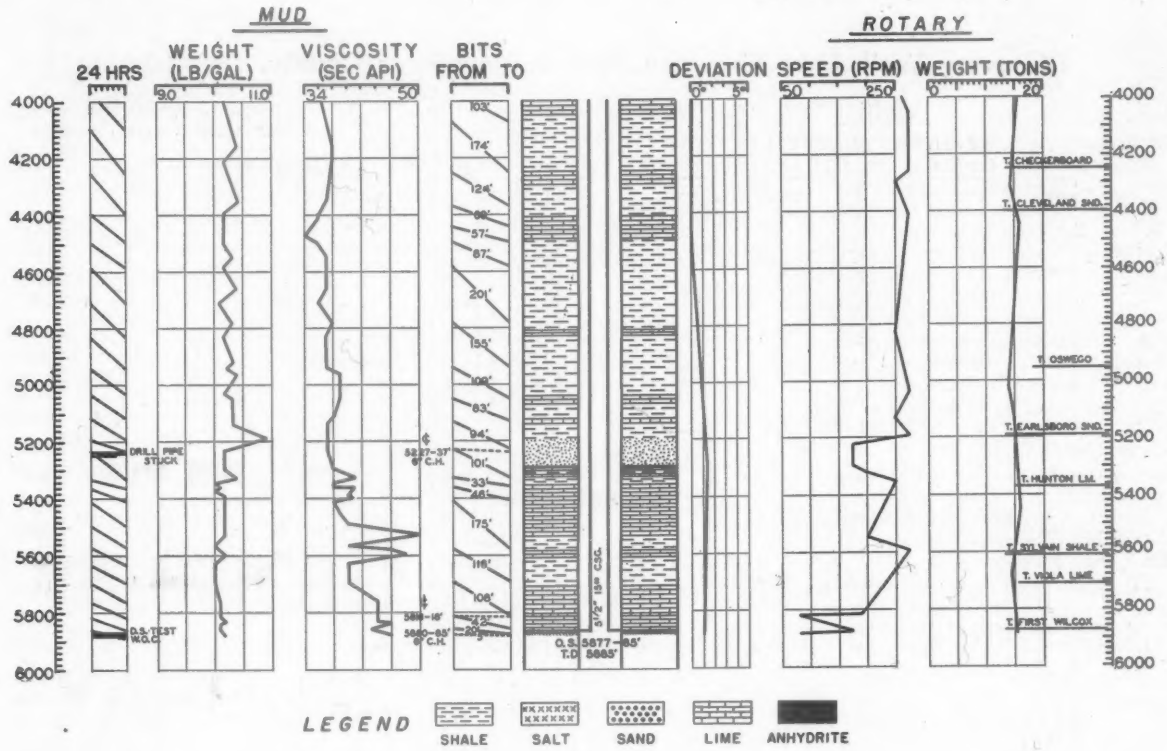
DRILLING CO., TULSA

Discovery Well, Lake Shawnee Pool, Pottawatomie County, Oklahoma



(Continued on Next Page)

Discovery Well, Lake Shawnee Pool, Pottawatomie County, Oklahoma (Continued)



DRILLING DATA

Started rigging up	11-27-42
Started drilling	12- 2-42
Drilled surface plug (254-57 ft.)	12- 6-42
Completed hole	1-13-43
5½-in. casing plug down	1-15-43
Time record:	
Rigging up	5⅓ days
Gross drilling time	47 days
Running and cementing casing and W.O.C.	167½ hrs.
Drill pipe stuck (T.D. 5,328 ft.)	2¼ days
Trips (46 round trips)	173½ hrs.
Pulling and laying down pipe for 5½-in. casing	8½ hrs.
Coring (3 cores)	6¾ hrs.
Circulating	31¼ hrs.
Reaming*	12½ hrs.
Electrical Survey (from bottom)	3½ hrs.
Drill-stem tests (two)†	4¾ hrs.
Shut down‡	51 hrs.
Type of rig	Mechanical rotary
Fuel	Butane

*Exclusive of reaming tight hole getting to bottom on trips. This included in trip time.

†Drill-stem tests at 5,227-37 ft. and 5,877-85 ft. Time includes making up and breaking down tool and actual testing. Does not include time waiting on tools.

‡Includes time waiting on testing tool (7½ hours), repairing and oiling rig, waiting orders and delays because of weather conditions.

BIT RECORD

No. bits	Type	Size (in.)
1	Rock bit	8¾
39	Rock bit	7⅞
3	Coreheads	6

MUD MATERIALS

Aquagel	317 sacks
Quadra Fas	90 lb.
Cotton seel hulls*	55 sacks
Oil†	25 bbl.

*Lost circulation drilling 5,537-43 ft., added 25 sacks of hulls; last circulation running 5½-in. casing 5,585 ft., added 30 sacks hulls.

†Spotted oil to loosen stuck drill pipe (T.D. 5,328 ft.).

CASING RECORD

Size (in.)	Weight (lb.)	Depth (ft.)	Cement (sacks)
10¾	40	257	250
5½	15	5,873	250
2½	Tubing	....	....

COMPLETION DATA

Date completed	1-22-43
Oil pay (Wilcox)	5,877-85 ft.
Method	Washed and swabbed

PRODUCTION TESTS

Time of test	11½ hrs.
Oil production (natural flow)	336 bbl.
Water production	0
Choke	1 in.
Initial tubing pressure	695 lb.
Initial casing pressure*	1,285 lb.

*Shut in.

REFINING

First Hydrofluoric Acid Alkylation Unit Finished

First commercial plant employing the hydrofluoric acid alkylation process for manufacture of 100-octane gasoline components has been placed in operation by Phillips Petroleum Co., it was disclosed last week.

"The plant," said Frank Phillips, chairman of the company, in announcing the new process, "employs the basic principle of paraffin-olefin alkylation discovered some years ago by Phillips research department and it was designed and built by the company's engineers to utilize an HF acid alkylation process developed within our organization.

"This catalytic agent—hydrofluoric acid—does not react permanently with the hydrocarbons being treated," explained Mr. Phillips. "Efficient operation," he went on, "is obtained with insignificant acid consumption. As a result, acid replacement costs are practically eliminated and there is no problem of acid-sludge disposal."

Disclosure that the first commercial unit using the hydrofluoric acid catalyst is in operation came as invitations were issued to a group of technical representatives from the petroleum industry, the Government, engineering concerns and oil companies participating in the aviation-gasoline program to inspect the new plant.

Company officials said the process operates at moderate temperatures, permitting the use of ordinary cooling water. Therefore, extensive mechanical refrigeration equipment for condensation and separation is not required in the hydrofluoric acid process.

Construction Started on Standard of Ohio Plant

CLEVELAND, Ohio.—Construction work started here last week on a $7,000,000 catalytic-cracking unit at Standard Oil Co. of Ohio's refinery. The unit is expected to be in operation within a year, although company

Sketches of Plant Operators

G. F. OLSEN, SR., has been elected director of General Petroleum Corp., following 18 years of service with the company. Mr. Olsen, a resident of Los Angeles, Calif., is a native of Indianapolis and is a graduate of Purdue University with degrees in electrical engineering and chemistry. He joined General Petroleum in 1925 as a consultant in the manufacture of lubricating oils.

G. F. OLSEN, SR.

In May 1932 he became manager of the company's laboratories, a position he held until his recent election to the board. Previous to his affiliation with General, Mr. Olsen successively served the Indian Refining Co., as manager of refining; the Union Oil Co., as superintendent of refining and, from 1918 to 1925, was engaged in consulting practice with offices in Boston and New York. During the previous war, he was consultant for the U. S. Navy at the Fall River, Mass., refinery which was under the supervision of Franklin D. Roosevelt, then under secretary of the Navy. At that time he also served as consultant for Secretary of State Hughes, and the American Petroleum Institute.

Mr. Olsen's son, Fred, a General Petroleum engineer, is now on leave from the company, serving as a director of civilian training for the War Department.

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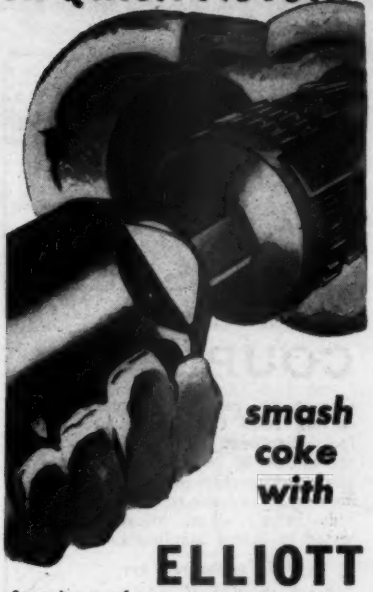

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officials declined to release details on the process, capacity and other data which might be considered a military secret.

Contract for purchase of the plant's production has been negotiated with Defense Supplies Corp., but the construction work is being financed by the company, it was understood.

E. B. Badger & Sons, Co., Boston, Mass., holds the general contract on construction of the unit.

PAW Voids Rule Banning Refinery Use of Gas Fuel

HOUSTON, Tex. — Request of the Petroleum Administration for War that refiners in the Gulf Coast district discontinue consumption of natural gas in manufacturing operations has been withdrawn. However, the PAW has suggested that refiners may wish to consider conversion of fuel facilities to the consumption of petroleum products in order to relieve all pressure possible on storage.

Eastern refiners discontinued use of natural gas several years ago and several are now burning coal in their stills because of the acute shortage of fuel oil.

Gulf Coast refiners were asked to discontinue use of gas 2 weeks ago probably as a routine dissemination of instructions to conserve all possible natural gas. Plant operators did not act promptly on the instructions, pending clarification. Refiners pointed out to PAW officials that natural gas is abundant in the Gulf Coast area and that if refiners discontinued its use as fuel, just that much more would be wasted into the atmosphere. Furthermore, refiners argued that conversion of burning facilities from natural gas to fuel-oil consumption would require expenditure of large amounts of critical materials.

DPC Raises Authorized Expenditure at Root Plant

An increase of $980,000 in the expenditures for 100-octane gasoline facilities has been authorized by Defense Plant Corp., at Root Petroleum Co., refinery at El Dorado, Ark.

First Federal Petroleum Butadiene Plant Finished

Operations started last week at the first completed petroleum-butadiene plant in the Government's synthetic-rubber program. Completion of the plant, a unit capable of manufacturing from 6,600 to 9,000 tons of butadiene annually, and commencement of operations were announced January 30 by Standard Oil Co. of Louisiana, Baton Rouge, La.

Major construction work was completed 3 weeks ago. The entire plant is now in operation and butadiene is being delivered, the company announcement said. Standard of Louisiana previously had the know-how for butadiene production from the successful operation of a smaller unit of the same design built previous to the war by the company at its Baton Rouge refinery.

Standard of Louisiana is also producing buna-N rubber in a plant that has been operating for the past 2 years. The original plant is producing synthetic-rubber materials at the rate of 20,000 lb. per day or 3,650 tons a year.

Output of Aetna Refinery At Louisville, Ky., Tripled

LOUISVILLE, Ky.—Output of the Aetna Oil Co.'s refinery here has been tripled during the past 3 years in order to meet requirements of expanded distribution. Recently, the company acquired all properties, outlets and equipment of the Kentucky Independent Oil Co., according to J. B. Hutchinson, vice president of Aetna. Two years ago Aetna acquired the river terminal of Tower Oil Co., at Cincinnati, Ohio.

In addition to supplying expanding marketing territory, approximately 50 per cent of the entire output of Aetna's refinery at Louisville goes directly to the manufacturing of essential war materials.

What's Going On At the Plants

Poly Unit Converted

ARKANSAS Fuel Oil Co., Shreveport, La., is converting its polymerization unit to service as a butadiene extraction plant.

Butadiene Unit Under Way

TAYLOR Refining Co., Taylor, Tex., is building a 5,500 to 6,000-ton butadiene unit at its Corpus Christi, Tex., plant which has capacity of 22,500 bbl. daily and a 2,000-bbl. cracking plant.

Codimer Unit at Pampa

DANCIGER Oil & Refining Co., Tulsa, is constructing a codimer unit at its Pampa, Tex., refinery. The refinery has capacity of 6,800 bbl. of crude daily and a 2,400-bbl. cracking unit.

Newhall Company Formed

NEWHALL Refining Co., a new corporation organized by William B. Parks and E. A. Ericson, has been formed in California and it has acquired the San Fernando Refining Co. from Joseph B. Moffett, who retired from active business. The plant is a 2,000-bbl. asphalt operation.

Natural Gas

Jersey Company Granted More Time to Sell Gas Units

PHILADELPHIA, Pa.—An extension of 6 months to August 4, 1943, has been granted Standard Oil Co. (New Jersey) to complete disposition of securities of gas utility companies. The postponement was authorized here last week by the Securities Exchange Commission which originally ordered that divestment proceedings should be completed by February 4.

In its request for an extension of time, Standard of New Jersey told the SEC that although it has proceeded diligently in working out a program for the disposition of securities of the gas concerns, some of the hearings are still pending and that under the circumstances the company could not complete the work by the original effective date.

Oklahoma Gas Buyers Make First Nominations

OKLAHOMA CITY, Okla. — Nominations totaling 3,610,000,000 cu. ft. for February were filed last week with the Corporation Commission covering purchasers' requirements from the Medrano sand in the West Cement field of Caddo County, Oklahoma. Thus, a new era was opened in Oklahoma conservation history with the order requiring gas purchasers to submit nominations for their future needs.

Earlier in January, the Corporation Commission issued its first natural-gas order covering the West Cement gas field. Engineers are now completing work of testing the field's 17 wells.

McKamie Gas Cleaning Plant Nearing Completion

LITTLE ROCK, Ark.—Completion of McKamie Gas Cleaning Co.'s plant for removal of hydrogen sulfide from sour gas in the McKamie field of southern Arkansas is scheduled in June or July. Construction work is under way on the plant 8 miles south of Stamps, Ark., it was reported last week by R. A. Howe, Magnolia, Ark., vice president and general manager of the recently-formed cleaning company.

Cost of the plant is estimated at $1,500,000. It will convert about 30,000,000 cu. ft. of sour gas daily into 25,000,000 cu. ft. of sweetened gas and will recover approximately 25,000 gal. of natural gasoline, butane, and isobutane per day in addition to commercial quantities of hydrogen sulfide.

The McKamie Gas Cleaning Co. was incorporated last November by Carter Oil Co., Mid-Continent operating subsidiary of Standard Oil Co. (New Jersey) and Atlantic Refining Co., both of which have large holdings of sour-gas producing acreage in the area. About a third of the sweetened gas production is to be sold to Arkansas Power & Light Co. and the remainder to Arkansas Louisiana Gas Co. Arkansas Power & Light will consume the gas in its steam-generating plant now under construction 2 miles east of Stamps and Arkansas Louisiana will distribute its portion of the supply among aluminum plants in the central part of Arkansas.

Magnolia Petitions for 5-Cent Gas Price at Cement

Application has been filed by Magnolia Petroleum Co. with the Oklahoma Corporation Commission asking that the price of natural gas in the West Cement field of Caddo County, Oklahoma, be fixed at 5 cents per thousand cubic feet.

The petition also requests the Corporation Commission to force Cities Service Gas Co. to connect Magnolia's wells and purchase gas ratably in the field.

Natural Gasoline

CNGA Issues New Preface On Testing Procedure

LOS ANGELES, Calif.—The use of two tests in obtaining a better relationship to plant production became standard practice in the California natural-gasoline industry February 1. Revisions are contained in the preface to Bulletin TS-351, "Tentative Standard for the Charcoal Test for the Determination of Gasoline Content of Natural Gas," which was approved by the executive committee of the California Natural Gasoline Association January 19.

"Recently," says the new preface, "the industry has been required to manufacture natural-gasoline products of widely varying vapor pressures including liquefied petroleum gases. The allocation of these products for royalty settlement purposes may be accomplished by the application of the 30-lb. 32° F. and the rectified-test results.

"The use of these two test results for royalty-allocation purposes must consider the quality of the individual gases and their relationships to the quality of the plant production. For this reason the use of the average of the 30-lb. 32° F. and the rectified-charcoal test results is recommended to produce a better relationship of the test yield to the plant production when natural gasolines containing substantially all of the isobutane and heavier hydrocarbons with or without a portion of the propane are produced.

"Stabilized natural gasolines of lower vapor pressures, composed predominately of pentanes and heavier hydrocarbons may be allocated on the basis of the rectified charcoal-test yields.

"The use of the 30-lb. 32° F. test results, the rectified-test results, the average of the two test results or a combination of the results for allocation purposes will depend upon contractual requirements and the particular distribution problems involved."

Liquefied Petroleum Gas Consumption Corrected

The review published on pages 10, 11 and 12, January 14, 1943, under the title "Liquefied Petroleum Gas Vital to War Production," contained a discrepancy on the estimated marketed production in 1942. Text of the story carried the figure at 548,000,000 gal., an increase of 19 per cent and Table 1 showed this item at 555,000,000 gal., a gain of 20.1 per cent. G. G. Oberfell, vice president of Phillips Petroleum Co., author of the liquefied petroleum gas review, advises the tabulated figure of 555,000,000 gal. is correct.

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PIPE LINES

Fluid Stream in WEP Line Nears Mississippi River

The head of the stream of fluid serving for testing purposes, while the War Emergency Pipelines, Inc., system is being filled, is expected to be near the Mississippi River the latter part of this week.

The Little Rock, Ark., station has been put in operation recently in addition to the Longview, Tex., station. In the East Texas area the following stations have been pumping crude oil directly into the WEP 24-in. trunk line: Pan American, Texas-Empire, Atlantic, Sun-Stanolind, Tide Water, Shell, Magnolia and Bell General. In addition to these, crude is being received from Humble in a tank at the Longview terminal through a line a little more than a mile long.

In the past 2 weeks there have been delays due to numerous minor troubles in the movement of oil out of Longview. The major difficulty has been air-binding, which developed in a section about 20 miles below the Arkansas River where there are a large number of hummocks in the rough bauxite country. After this obstacle was overcome by release of air from the line oil moved at a satisfactory rate of about 4,500 ft. per hour. With the Little Rock station in operation flow of oil is accelerated. The Longview and Little Rock stations together can move oil through the line at half its 300,000-bbl. daily rated capacity. Between Little Rock and the Mississippi River the terrain on the whole is favorable for a steady flow of oil. Beyond the Mississippi River the line crosses 40 miles of rough country which may impede oil movement temporarily.

In filling the line, oil has been pumped most of the time at 750-lb. pressure with a steadily declining volume up to the time the Little Rock station went into operation, making an increase possible. For testing, a maximum pressure of 850 lb. has been used recently. It is believed that the remainder of pumping facilities will be put in service in two stages. The next step will be to put Stations 3, 7, 9a and 9b into service. To increase flow after this, stations 4, 6, 8 and 10 will be started. Preceding the oil there has been about 60 miles of water but by now there are probably stretches of some distance where oil is on top and water is at the bottom of the pipe.

General office of WEP was moved from Little Rock, Ark., to the Enquirer Building, Cincinnati, Ohio, during the past week. The general office is now established in its new address. Personnel moved include executive, treasury, accounting, purchasing, engineering, traffic and right-of-way and claims. These departments should be addressed at P. O. Box 1638, Cincinnati, Ohio.

A division office for supervising construction for Defense Plant Corp. and for supervising operations for Defense Supplies Corp. will be maintained at Little Rock for an indefinite period with a staff of about 20 employes under Oscar R. Burden, general superintendent.

Features of the 20-in. products line to be built from Beaumont, Tex., to Seymour, Ind., paralleling the 24-in. crude-oil line part of the way are discussed elsewhere in this issue.

Announcement of 836-mile 20-in. line by Petroleum Administrator Ickes followed War Production Board approval of the project, subject to final review by the requirements committee. He had recommended it to WPB as "the surest, most economical in terms of material and manpower and the most dependable method for meeting military and essential civilian requirements for petroleum products during the winter of 1943-44."

Bayou Pipe Line Is Ready for Operation

The 275-mile line of 8-in. and 10-in. built by Bayou Pipe Line Co. from Houston via the Beaumont-Port Arthur, Tex., area to Baton Rouge, La., is now ready for operation. Shipments of refined products are scheduled to move within a few days. Deliveries at Baton Rouge in the early stages of operation are expected to be at the rate of about 30,000 bbl.; within the following week it appears that they will be up to 44,000 bbl. daily.

Start of operations has been delayed by pressure testing of the line, in the course of which a number of failures occurred because the system was built of second-hand pipe from 12 sources in the Mid-Continent, Texas and Louisiana. Some of this pipe is more than 20 years old. Failures came with the splitting of lap-

weld joints. There were no failures of welds made by contractors' organizations building the line.

The Bayou Pipe Line makes an important contribution to relieving the East Coast shortage situation by feeding into the Plantation line.

Sinclair Expands Facilities Near Houston

Sinclair Refining Co. has asked for bids on construction of a 26-mile 10 or 12-in. line to extend from its Sinco terminal near Houston, Tex., northward to the Huffsmith station. The loop will parallel a 12-in. carrier through which East Texas crude is delivered to the company's plant at Houston. The loop will tie into a series of 8-in. lines extending northward via Mexia, Tex., to Oklahoma. This last unit will allow the company to pump oil northward and at the same time give uninterrupted service southward out of East Texas to Houston.

O. C. Whitaker Co. has been awarded a contract by Sinclair to lay a 6-mile, 8-in. line from the company's Houston tank farm to Shell Oil Co., Inc.'s refinery at Houston. This is in line with Sinclair's contract to handle East Texas crude of Shell Pipe Line Co. from the field to Houston for the duration. Shell's line from East Texas has been converted into a fuel-oil carrier which will move products northward from Houston into the newly completed "big inch" line from East Texas to Norris City, Ill.

Sinclair has made initial deliveries through its new 150-mile 8-in. line from Corpus Christi to Damon Mound where the new line connects with an 8-in. line to Houston. The new carrier is expected to handle approximately 20,000 bbl. daily.

Tiffin-Akron Products Line Is in Operation

The 82-mile, 8-in. products line from Tiffin to Akron, Ohio, went into complete operation at 8 a.m. January 23, 6 months after it was started in August 1942, according to an announcement by Jessie Jones, secretary of commerce.

The project costing about $1,400,000 sponsored by the Petroleum Administration for War, was financed and is owned by Defense Plant Corp., a subsidiary of Reconstruction Finance Corp.

It is to be operated by the Ohio Emergency Pipe Line Co., owned by the Standard Oil Co. of Ohio, Sun Oil Co. and Shell Oil Co., Inc.

PIPE-LINE PERSONALITIES

J HARRY WOOD, JR., vice president and general manager, Atlantic Pipe Line Co., grew up at Atlantic City, N. J., and after graduation from the Atlantic City High School he attended the Wharton School, University of Pennsylvania, at Philadelphia.

He entered the employ of Atlantic Refining Co., in 1916 and with the exception of time out for military service during 1917-19 has been with the same organization since that year. He served in England, France, and Germany with the Regular Army units of engineers and infantry and received a second lieutenant commission, Infantry Reserve, at officers candidates school, Langres, France, in 1918.

When he returned to the United States in the summer of 1919, he went back into the purchasing department of Atlantic Refining Co. and remained at Philadelphia until the spring of 1922 when the company became active in pipe-line operations in Louisiana. He became assistant to the pipe line manager at Shreveport, La., where the main pipe-line office was located at that time.

He was advanced to the position of general superintendent in 1927 and moved to headquarters at Dallas, Tex. In 1935, he was promoted to vice president and general manager.

Mr. Wood has had an active part in the expansion of Atlantic's pipe-line system which now has more than 473 miles of gathering lines and 1,170 miles of trunk lines in Louisiana, Texas, and New Mexico.

He is married and has a son 17 years of age who is a senior in high school, and a daughter 21, a student at the University of Texas. Golf is his favorite sport.

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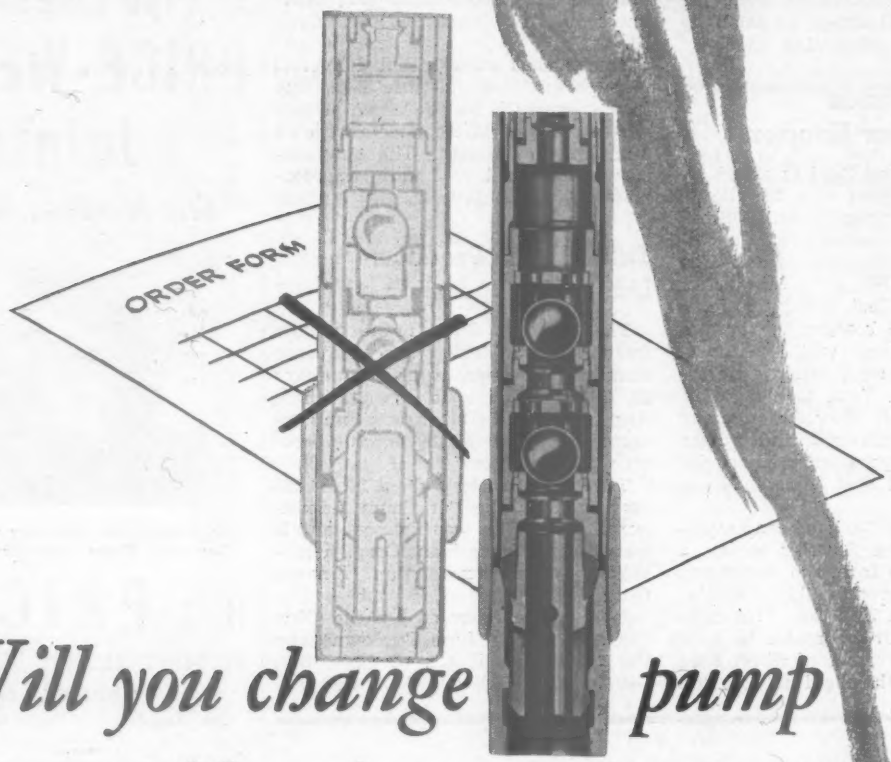

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Exploration and Drilling

Week's Highlights

FOR the second consecutive week, completions have fallen below 300 and this year's record to date is only slightly above half that of the corresponding period of 1942. At that time, the effects of M-68 had not become apparent as the wells had mostly been started prior to the date the order went into effect.

An area having excellent possibilities for new oil and in which a number of noteworthy discoveries have been made in recent years in southern Arkansas. An appraisal of the possibilities of the Cotton Valley formation in that state begins on page 62.

WEST TEXAS: Saturated lime was cored in a test about 3 miles southwest of the Means pool, Andrews County (p. 73).

NORTH TEXAS: Caddo production in the Stoneburg pool, Montague County, has been extended ½ mile. Caddo production has also been found in a reworked abandoned well north of the Joy pool (p. 65).

WEST CENTRAL TEXAS: Another Mississippi lime producing spot has been found in Stephens County. Prospects are that Stith and South Noodle will be extended (p. 65).

CANADA: Declines in Turner Valley production and of available oil from Montana are causing fears of a shortage (p. 76).

TEXAS GULF COAST: An outpost to the Katy field is preparing to test the gas pay. A test of a deep Wilcox well east of Ramsey, Colorado County, made a little distillate with considerable salt water (p. 79).

ILLINOIS: The Devonian area west of Centralia is being actively tested. A dry hole was recorded by a wildcat while the second tests in South Bartelso and Boulder are oil and gas producers, respectively (p. 74).

OKLAHOMA: The McComb discovery in Pottawatomie County gaged 616 bbl. from the Hunton. A south outpost to the Byars pool reports good production and Northeast Edmond has a 40-acre north extension (p. 80).

CALIFORNIA: The Guijarral Hills prospect, east of Coalinga Nose continues to look good (p. 70).

KANSAS: Arbuckle production was obtained 2 miles north of the Hiss pool in Barton County (p. 76).

LOUISIANA GULF COAST: Union Sulphur's wild well in the Branch area of Acadia Parish has been brought under control. The Napoleonville distillate discovery is shut down for storage and Humble's deep distillate discovery south of Schooner Bayou was killed after making a good 1-hour flow (p. 79).

OHIO: Clinton gas production has been extended ½ mile south in the Pittsfield pool by a large well (p. 81).

WYOMING: Oil is reported in the Dakota sandstone by a wildcat northwest of the Pilot Butte field (p. 68).

EAST TEXAS: The south offset to the Quitman discovery well has cored about 100 ft. of saturated Paluxy sand (p. 65).

WEST VIRGINIA: A showing of gas is reported in the Oriskany in a deep Pleasants County test (p. 66).

COMPLETIONS IN ALL FIELDS . . .

(Week ended January 30, 1943)

	Oil	Gas	Dry	Total	Footage	Comp. to date 1943	Comp. to date 1942
N. Y., Pa., and W. Va.	41	14	3	58	112,410	227	406
Ohio	4	10	6	20	50,381	54	105
Indiana	0	1	2	3	4,217	13	36
Kentucky	4	0	0	4	6,012	8	28
Illinois	19	2	13	34	90,719	135	224
Michigan	2	0	1	3	5,654	31	61
Kansas	16	0	12	28	93,649	100	141
Nebraska	0	0	0	0	0	3	3
Missouri, Iowa	0	0	0	0	0	0	0
Oklahoma	10	1	18	29	88,198	89	136
Texas:							
North Central Texas	6	0	15	21	56,552	94	168
West Texas	13	0	1	14	66,283	65	181
Texas Panhandle	0	1	0	1	2,626	17	73
Eastern Texas	2	0	4	6	29,937	20	51
Texas Gulf Coast	3	0	1	4	23,707	33	92
Southwest Texas	9	0	4	13	51,291	69	133
Total Texas	33	1	25	59	230,396	298	698
North Louisiana	3	1	1	5	23,672	23	60
Louisiana Gulf Coast	0	0	3	3	26,342	32	64
Total Louisiana	3	1	4	8	50,014	55	124
Arkansas	1	0	0	1	8,978	12	13
Mississippi	0	0	0	0	0	1	8
Montana	1	0	0	1	3,041	18	14
Wyoming	6	0	1	7	22,488	16	6
Colorado, Utah	0	0	0	0	0	1	1
New Mexico	2	0	0	2	3,720	17	25
California	18	0	6	24	76,603	70	103
Total United States	160	30	91	281	846,480	1,148	2,132
Total previous week	181	39	83	293			
Week ended Jan. 31, 1942	348	45	134	527			

Future Development of Northwest Wilmington Field

by W. R. Cabeen and A. L. Hunter *

MARKED changes in stratigraphy as one goes from the main portion of the Wilmington field northwestward through Northwest Wilmington toward Torrance coupled with complicated faulting, flattening of the structure, etc., influencing the amount of vertical and horizontal zonal saturation, makes it necessary in estimating recovery to consider each portion of the area separately and on its own characteristics and merit.

Grouping the Northwest Wilmington extension into three general groups comprising fault blocks A, B, and C, some of the physical conditions and safe amount of zone to include in each are as follows (Fig. 1):

Block A:

Thickness of Ranger and Terminal zones = 485 ft. (Includes from F_1 point to shell marker located approximately 85 ft. stratigraphically above "J" sand.) Total aggregate productive sand thickness of this interval is 110 ft. In certain cases the 100-ft. interval above the F_1 marker is included. This provides an additional 26 ft. of producible sand.

Gravity of Ranger oil = 16°.

Gracity of Terminal oil = 18° to 20°.

Average porosity for both zones = 15 per cent.

Average saturation = 75 per cent.

Block B:

Thickness of Ranger and Terminal in upper structural portion of block (includes the 110-ft. interval above the F_1 marker and full total 40-ft. penetration of "J" sand) = 760 ft. Total aggregate producible sand in interval = 190 ft.

Lower structural portion of block (F_1 point to and including 20 ft. penetration of "J" sand) = 600 ft. Total aggregate producible sand in interval = 150 ft.

F_1 point to shell marker = 510 ft.

Total aggregate producible sand interval = 127 ft.

Use same average porosity, saturation and gravity values as Block A.

Block C:

Lowest structural portion of block (includes from F_1 point to and including 20 ft. penetration of "J" sand) = 670 ft. Total aggregate sand thickness = 167 ft.

Highest structural portion of block (including from F_1 point to and including full 40-ft. penetration of "J" sand) = 175 ft.

A few locations in the highest structural location of this fault block are producing from the main Tar zone. This interval is 100 ft. thick with a total aggregate producible sand thickness of 90 ft., an average porosity of 30 per cent, and a saturation of 85 per cent. The water table in the Tar sand indicates an early flooding of this zone at these highest structural locations in this block.

Average effective porosity of Ranger and Terminal zones = 15 per cent.

Average saturation of Ranger and Terminal = 75 per cent.

Average Ranger gravity = 16°.

Average Terminal gravity = 18° to 20°.

Recovery per acre-foot in Northwest Wilmington varies from 250 to 400 bbl. depending upon local conditions of effective porosity, gas-oil relationship and ratio, gravity of oil, connate water, date of completion relative to offset wells, etc. Recovery per acre varies from 25,000 to 75,000 bbl. depending upon thickness of zone possible to include under local structure conditions and factors influencing recovery per acre-foot mentioned above. These figures are based on an assumed 5-acre spacing. Disregarding economic factors it is of course obvious that closer spacing will increase relative barrels per acre recovery. The above recovery per acre data are figures which are not in accord with extreme cases often cited where very large recoveries have been obtained from a well on a 1-acre lease, which has obviously partially drained a much larger acreage involving a considerable area surrounding lease involved. Such wells are usually wells that have had the advantage of being among the first drilled. **The writers believe 5-acre spacing to be the most prudent from an economic and engineering standpoint.** It is believed that the present 10-acre spacing will not adequately drain the Northwest Wilmington area. With the present great shortages of this strategically located low-gravity crude and the shortage of steel, the greatest crude recovery that can possibly be made with the least expenditure of crucial steel is the ideal, if the element of time is disregarded. However, the time element alters this ideal condition from the

This is the concluding installment of a series on the geology and development of the Northwest Wilmington-Torrance area in California. The first two appeared in the issues of January 14 and 28.

*Consulting geologists and engineers, Los Angeles, Calif.

DAILY AVERAGE PRODUCTION FOR WEEK

	Jan. 30 crude oil	Jan. PAW quota all oils	Jan. 23 crude oil
Arkansas	74,900	78,300	75,050
California	765,750	815,000	775,275
Colorado	6,300	7,000	6,100
Eastern fields	90,000	107,600	91,000
Illinois	241,000	272,600	228,450
Indiana	14,850	17,200	15,000
Kansas	291,800	310,000	307,500
Louisiana	339,350	347,500	338,200
North Louisiana	*91,850*	.....	*90,500*
Louisiana Gulf Coast	*247,500*	.....	*247,700*
Michigan	60,800	63,700	58,900
Mississippi	55,300	50,000	57,500
Montana	14,955	24,700	19,320
Nebraska	2,750	3,400	2,700
New Mexico	104,540	105,300	104,530
Oklahoma	347,750	400,600	346,650
Texas	1,331,950	1,426,800	1,330,900
East Texas	*327,500*	.....	*327,600*
West Texas	*201,000*	.....	*201,100*
North Central Texas	*136,750*	.....	*136,700*
East Central Texas	*101,700*	.....	*101,600*
Texas Panhandle	*89,000*	.....	*88,400*
Texas Gulf Coast	*409,500*	.....	*409,300*
Southwest Texas	*66,500*	.....	*66,200*
Wyoming	88,890	94,500	92,250
Total United States	3,830,885	4,124,200	3,849,325
Total production Jan. 1-Jan. 30, 1943			115,490,990 bbl.
Same period last year			123,625,985 bbl.

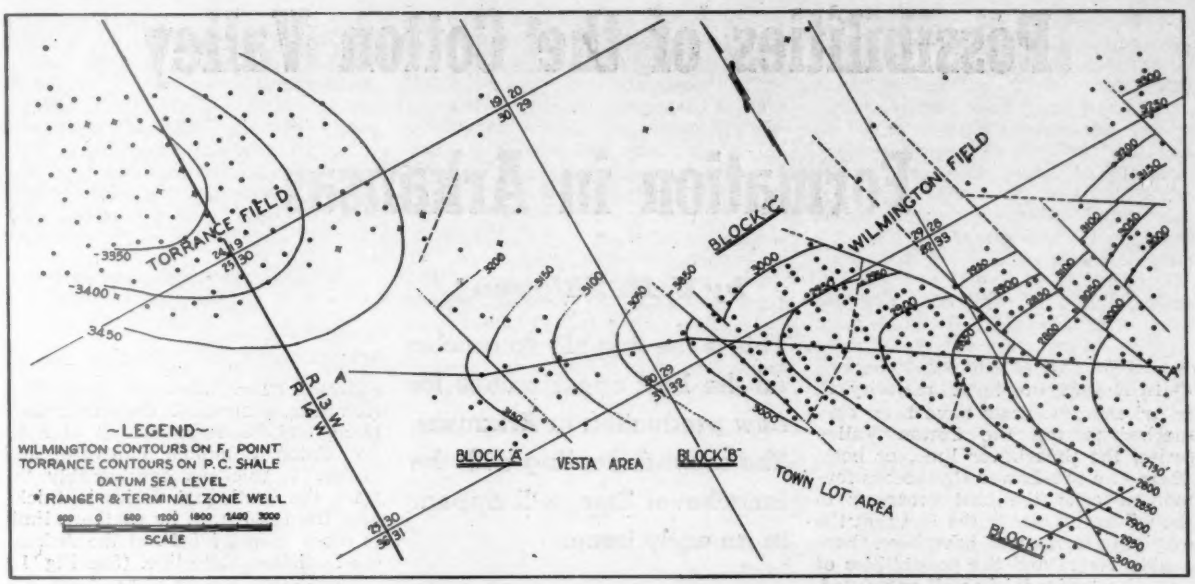


Fig. 1—Northwest Wilmington-Torrance area showing undrilled area in Ranger and Terminal zones. The lower zones are drilled to a much less extent. (Fig. 3, page 74, January 14, 1943.)

standpoint of obtaining this greatly needed vital crude for the war and during the time of the prosecution of this war. Under theoretical conditions of spacing, the time of withdrawing the oil is prohibitably lengthened. This much greater period of time also brings in economic considerations of investment. From this standpoint the 5-acre spacing is also the best.

Under the present 10-acre spacing policy, assuming that there are 650 undrilled productive acres to be developed, and using the average recovery for the first year of production in Northwest Wilmington of 30,000 bbl. per well, it is apparent that this area which represents the greatest portion of the proven reserves of the entire Wilmington field could only supply as a **maximum** in this first flush productive year, less than 2 million barrels. (Actually it would be much less than the above figure as it does not allow any time for the drilling of these wells, which under present conditions of scarcity of labor and materials would be considerable.)

There has been a tendency of overexaggeration of initials and ultimates in this area because of the desire to obtain as high allowables as possible. Since the proration of production in Northwest Wilmington has been lifted (February 1942), because of the urgent need for it in prosecuting the war, the true productive rates, of which the wells in this area are capable, have been more clearly shown. An approximate average initial production figure for the undeveloped proven portion of Northwest Wilmington will not be in excess of 100 bbl. per day.

Conclusion

Northwest Wilmington offers an area for future development of reserves, the most promising of which are:

1. Approximately 650 acres offering Ranger and Upper Terminal zone development.

2. Sub-Ford zone production in the Townlot Ford zone area, discussed in the text in detail.

3. In Blocks B, C, and portions of Block I, formations below the base of Upper Terminal have not been penetrated. Structural complexities as now revealed suggest possibilities in Lower Terminal, Ford, and Sub-Ford zones equivalents. These possibilities are suggested in the profile section A-A' and structure contour maps (Jan. 14, 1942, pp. 72 and 74).

It might also be stated that the area shown on the upper right-hand portion of Fig. 1 offers good possibilities of small long-lived low-gravity Ranger production.

There are also a few undrilled areas in Torrance which in event of price adjustment might be well worth drilling to help supply the present shortages of low gravity crude.

The greater risk in these areas near the edge limits of the field, the much lower expectancy per acre (saturated sand thickness much less, especially thin in North Wilmington) and the present high cost of development and operation make certain portions of these areas of doubtful commercial worth when evaluated on the relatively low current market price of this vital crude.

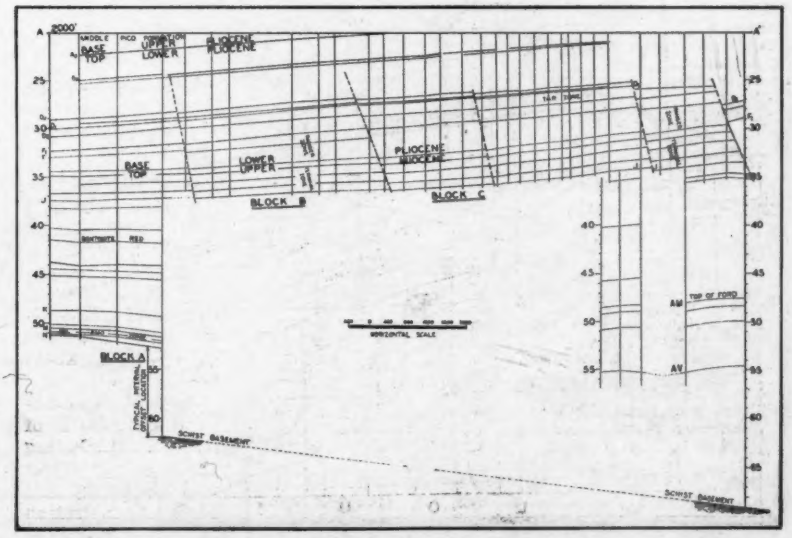


Fig. 2—Cross-section of Northwest Wilmington-Torrance field based on electrical logs

Possibilities of the Cotton Valley Formation in Arkansas

by C. H. Thigpen *

This is the first of two articles on the best opportunities for new production in Arkansas. The second, dealing with the Smackover lime, will appear in an early issue.

SINCE 1936 the large majority of Arkansas wildcats have been earmarked to test the Cotton Valley series, the Smackover lime, or both These two pre-Lower Cretaceous formations offer the best prospects to the wildcatter due to the fact that the overlying formations have been thoroughly tested and the possibilities of new discoveries fairly well exhausted.

Cotton Valley Formation

The Cotton Valley formation is the name given by the Shreveport Geological Society to a group of marine, fossiliferous, dark shales, limestones, and sandstones lying immediately below the red beds of the Hosston formation in the Cotton Valley field in North Louisiana. In southern Arkansas the Cotton Valley formation changes into red beds known as the Schuler facies because of its occurrence in the Schuler field in Union County.

The distribution and thickness of the Cotton Valley formation in Arkansas extends over the following counties: The southern halves of Hempstead, Nevada, Ouachita, Calhoun, and Bradley; and all of Ashley, Union, Columbia, Lafayette, and Miller. It thickens considerably toward the south and varies in thickness from 600 ft. at its northern limit to more than 2,400 ft. at the Arkansas-Louisiana state line. (See Fig. 1.)

The Cotton Valley of southern Arkansas consists of interbedded variegated shales and sandstones. The sandstones range from fine to coarse grained, are usually white or red, are more abundant in the lower part of the formation than in the upper, become more abundant northward, and predominate over the shales near the northern limit of the formation. Most of the shales are red and gray, but

*Chief Engineer, Oil and Gas Commission, State of Arkansas.

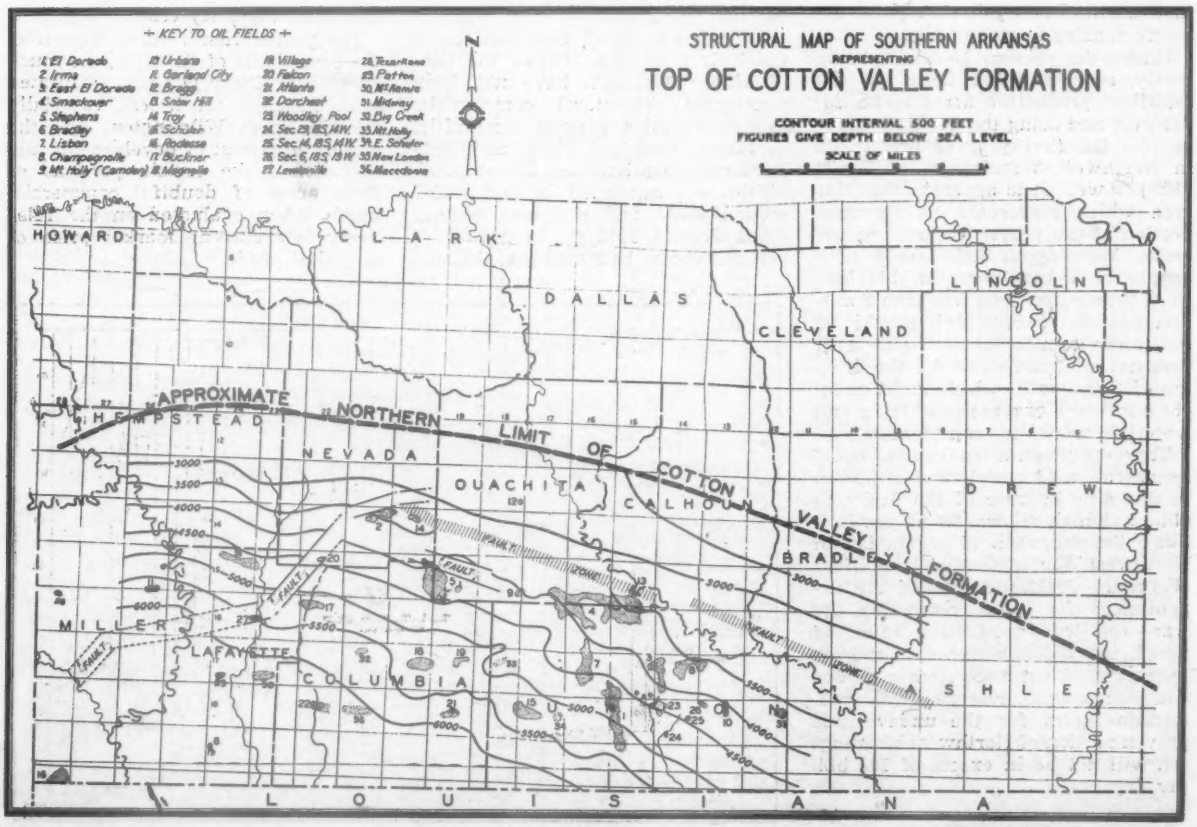


Fig. 1

some are brownish or greenish gray. Some gray shales in the upper part of the formation contain numerous pellets of brown to brownish-black siderite which are distinctive of the formation. The shales are interbedded with subordinate amounts of dolomite and argillaceous dolomite. Pebbles of chert and quartzite occur locally throughout the lower few hundred feet of the formation.

Arkansas' Discovery Well in Cotton Valley

On April 5, 1937, Lion Oil Refining Co. A-1 Edna Morgan, located in the Schuler field in Union County, began flowing the first oil to be produced from the Cotton Valley in Arkansas. This producing horizon was locally named the Morgan sand which occurs approximately 5,500 to 6,000 ft. below the surface in the Schuler field. Other wells were immediately drilled and as a result it was found that the Morgan sand was lenticular since dry holes were obtained between production.

On September 17, 1937, Edwin M. Jones, in search of Smackover lime production, discovered production in the basal zone of the Cotton Valley also located in the Schuler field. This horizon was named the "Jones sand," and has proved the most prolific Cotton Valley oil pool discovered to date in Arkansas. A drilling campaign immediately followed, resulting in 146 producing wells with an estimated original reserve of 56,000,000 bbl. of oil.

Table 1 gives a list of all Arkansas Cotton Valley pools discovered to date, along with discovery dates, depths, number of producing wells and cumulative oil produced for each pool.

As of October 1, 1942, Arkansas' Cotton Valley pools were producing approximately 19 per cent of the state's total production, and approximately 27 per cent of the state's prorated production. These percentage figures should take an upward trend in the near future when the Cotton Valley horizons in the Dorcheat and Macedonia pools begin to produce. Although there are several wells completed in the Cotton Valley section of the Dorcheat and Macedonia pools, they have been closed to production due to a lack of market for the gas. Recently a defense-plant market in Hot Springs, Ark., was found and the two pools will be opened to production as soon as the necessary pipe lines are completed.

TABLE 1—Cotton Valley Oil Pools

Field and zone—	Discovery date	Subsurface depth (ft.)	No. of wells	A.P.I. gravity	Cumulative production (bbl.)
Schuler, Morgan	4- 5-37	5,500-6,000	14	32	2,508,770
Schuler, Jones	9-17-37	7,500	146	33	25,550,446
Schuler, East	5-20-41	5,500	6	43	231,992
Schuler, Leona	6-28-41	6,900	7	44-70	201,500
Dorcheat, 7,800 ft.	2- 3-42	7,800	11	43-62	37,165
McKamie, 7,250 ft.	1942	7,250	1	43	15,209
Macedonia, 8,000 ft.	1942	8,000	9	62	8,071
New London, Frost	4-12-42	5,700	6	31	66,270

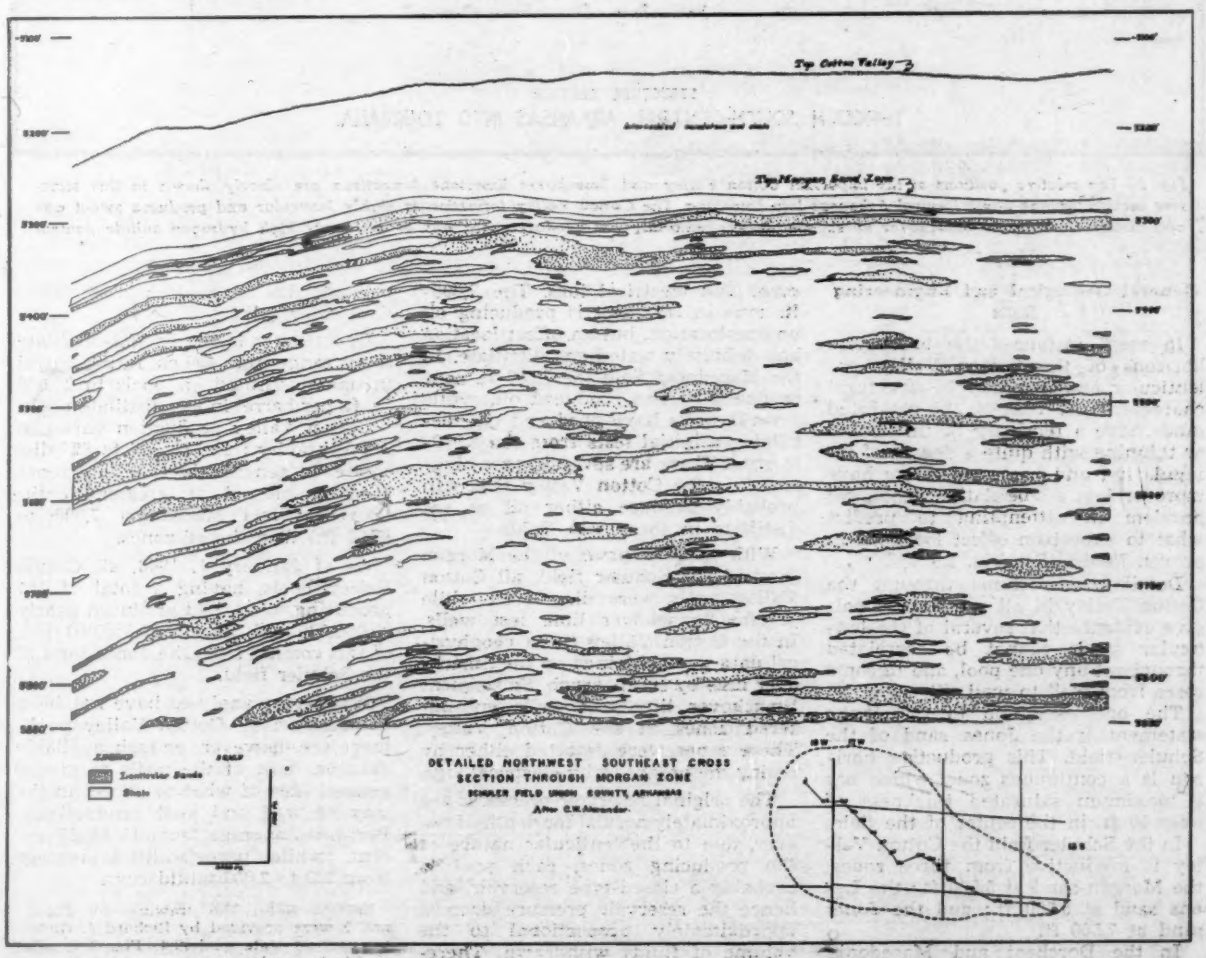


Fig. 2

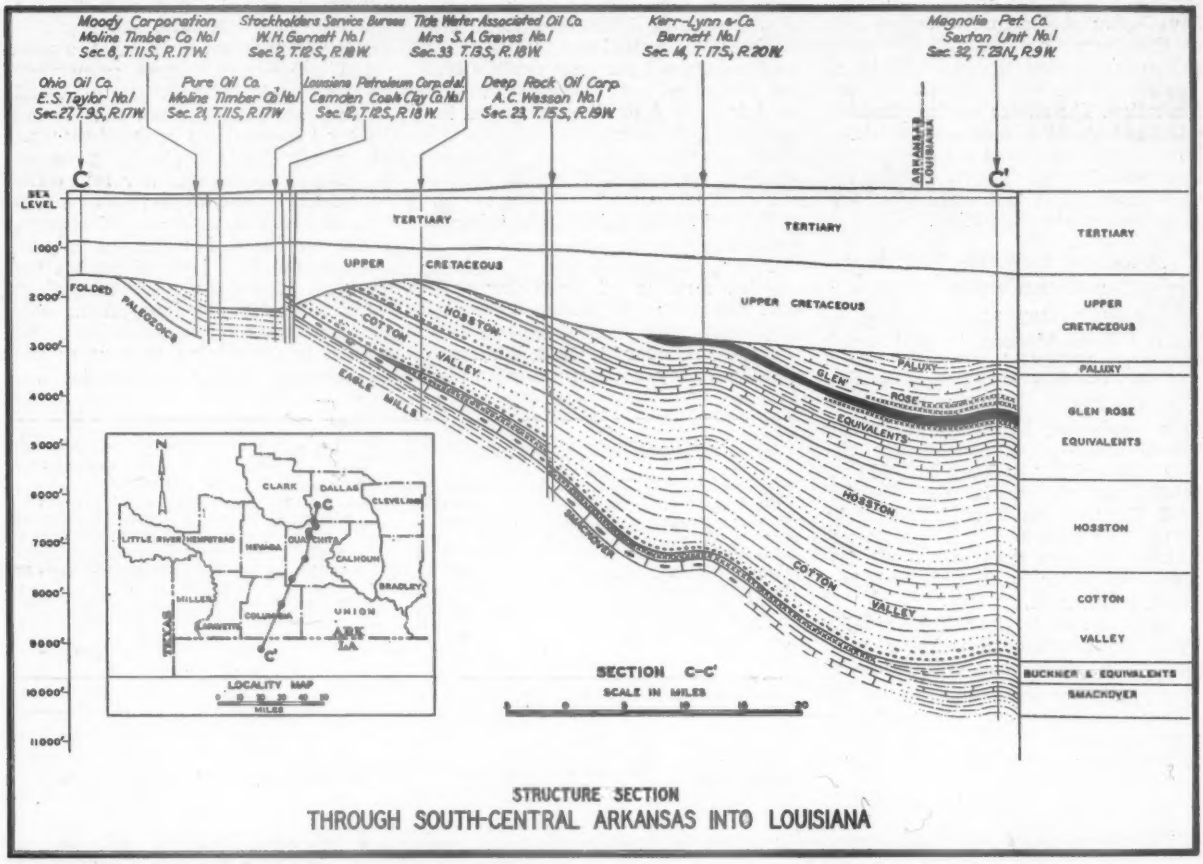


Fig. 3—The relative positions of the important Cotton Valley and Smackover limestone formations are clearly shown in this structure section through South Central Arkansas into Louisiana. The Cotton Valley formation is highly lenticular and produces sweet gas and distillate, while the Smackover intercommunicates uniformly but produces sour gas of extremely high hydrogen sulfide content

General Geological and Engineering Data

In most instances the productive horizons of the Cotton Valley are lenticular and irregular in structural characteristics. That is, the saturated sands have a tendency of thickening or thinning with quite a degree of irregularity, and hence operators have more or less a speculative geological problem in attempting to predict what to expect on offset locations in proven fields. (See Fig. 2.)

Detail cross-sections through the Cotton Valley in all producing pools give evidence that several of the lenticular sands cannot be correlated throughout any one pool, and in some cases from well to well. (See Fig. 3.)

The one exception to the above statement is the Jones sand of the Schuler field. This productive horizon is a continuous zone, which has a maximum saturated thickness of over 80 ft. in the center of the field.

In the Schuler field the Cotton Valley is productive from three zones: the Morgan sand at 5,500 ft.; the Leona sand at 6,900 ft.; and the Jones sand at 7,500 ft.

In the Dorcheat and Macedonia fields several oil and gas distillate-saturated zones are indicated from cores and electrical logs. The 7,800-ft. zone in Dorcheat is producing oil on one location, but an offset location has definitely tested gas distillate. In the Macedonia field the 7,800-ft. zone in one well has produced oil, while several wells have produced gas distillate on initial tests from the 8,000-ft. zone. There are several zones higher up in the Cotton Valley that will probably produce either oil or gas distillate in these two fields.

With the exception of the Morgan sand of the Schuler field, all Cotton Valley pools were discovered while drilling Smackover lime test wells. In the Cotton Valley fields geophysical data were obtained on the Smackover lime by seismograph. Subsequent Smackover lime test wells encountered zones in the Cotton Valley. These zones were detected either by coring the breaks or by electrical logs.

The original reservoir pressures are approximately normal for depth. However, due to the lenticular nature of the producing zones, each pool is probably a closed-type reservoir, and hence the reservoir pressure drop is approximately proportional to the volume of fluids withdrawn. Therefore, it is indicated that the flowing life of most Cotton Valley pools will be short due to the lack of an effective water drive.

Operating gas-oil, or gas-distillate ratios range from 400 cu. ft. per barrel in undersaturated oil pools to 20,000 cu. ft. per barrel in gas distillate pools.

Cotton Valley production varies in A.P.I. gravity from 31° oil to 62° distillate. In general the distillate zones are encountered at greater depths (Dorcheat and Macedonia 7,800 to 8,000 ft.) than the oil zones.

As of January 1, 1943, all Cotton Valley pools, having a total of 181 producing wells, had produced nearly 29,000,000 bbl. of oil, 25,550,000 bbl. of this coming from the Jones sand of the Schuler field.

While core analyses have not been obtained on all Cotton Valley pools, there are, however, enough available data on most of the pools to give a general idea of what to expect in the way of well and pool productivity. Porosities average from 15 to 25 per cent, while permeabilities average from 200 to 2,000 millidarcys.

Editor's Note: The drawings for Figs. 1 and 3 were provided by Richard J. Anderson, acting state geologist. Fig. 2 is after C. W. Alexander and is provided through the courtesy of the American Association of Petroleum Geologists.

N. CENTRAL TEXAS

Stoneburg Pool Extended Half Mile to the Southeast

WICHITA FALLS, Tex.—A ½-mile southeast extension for the Stoneburg pool of western Montague County was assured as Continental Oil 1 S. W. Hurd, Section 4, Limestone County School Land Survey, made a flow of 55 bbl. through 30/64-in. choke in 3½ hours. Previously the well had swabbed and flowed 256 bbl. in 10 hours through tubing with fluid level 400 ft. from surface. The well was still testing through reduced choke. The oil is coming from Caddo lime at 6,035-96 ft. which has been acidized with 8,000 gal. acid.

In the same county, Continental Oil 1-A Hildreth, NE cor. Section 57, E.T. Ry. Survey, southwest offset to the discovery, Hildreth 1, topped Caddo lime at 6,005 ft. and was drilling below 6,066 ft. in dry conglomerate. Showing of oil was encountered from 5,592 to 6,005 ft.

In western Jack County, east of Jermyn, Shell Oil 1 Wolfe, Section 3341, T.E.&L. Survey, topped Ellenburger lime at 5,582 ft., drilled dolomitic lime with stains of oil from 5,588 ft. to 5,631 ft., the total depth, and was running an electric logging device to determine the extent of the porosity. Youngblood & Foree 1 Cherryhomes, east of Jacksboro 8 miles, topped the Ellenburger at 6,565 ft. and was shut down for orders after reaching a total depth of 6,738 ft. in hard, dry lime and dolomite. It will probably be abandoned.

In Clay County, Bridwell Oil 3 Viola Myers, an old test temporarily abandoned as dry in June 1942, was cleaned out and casing was perforated opposite the Caddo lime section and flowed at the rate of 224 bbl. per day. Previously the well had been drilled to total depth of 6,067 ft. in Ellenburger, which was topped at 6,051 ft. Top of the Caddo was 5,506 ft., and Mississippi lime was topped at 6,019 ft. The well is ½ mile east of the 1 Viola Myers, which is producing from Caddo pay at 5,772-88 ft. Initial potential was 90 bbl. per day, and it was completed in December 1941. The wells are located 2 miles north of the Joy pool, which is producing from Strawn sand, Caddo lime, and Mississippi lime.

Two disappointments were registered for the Watson pool of southwestern Clay County last week. Roy Lee 3 Tom Watson, W. A. Farris Survey, between producers from the Caddo lime section, was abandoned at 6,023 ft., while a northeast offset to producers, Republic Natural Gas 1 J. T. Gates, J. Scott Survey, was abandoned in the Caddo at a total depth of 5,537 ft. The pool now seems to be well defined on the west and northeast sides. In northeastern Clay, Roy Lee 1 Maddox, T. M. Hughes Survey, new pool opener offsetting a junked Shell Oil Co., Inc. test, started to take a pumping test and the well began flowing, but no gage has been reported on the flow. The oil is coming from perforations in casing from 5,475 to 5,505 ft., where the lime has been treated with 5,000 gal. acid.

NORTH CENTRAL TEXAS COMPLETIONS

Wildcats

Cooke County: Burk Royalty 1 Gladney, SE SE SE Sec. 24, Hunt County School Land, dry, T.D. 2,913 ft.

R. G. Drilling 1 J. C. Gregory, Thos. Toby Sur., dry, T.D. 1,886 ft., shale.

Throckmorton County: Lion Oil Refining 1 V. Williams, Sec. 2177, T.E.&L. Sur., elev. 1,251 ft., Caddo 4,201-4 ft., Marble Falls 4,644 ft., Barnett shale 4,812 ft., Chappell, 4,846 ft., dry, T.D. 4,976 ft., lime.

Fields

Cowan, Archer County: Cato Oil 4 S. M. Cowan, Blk. 62, Jefferson County School Land, dry, T.D. 856 ft.

Ferguson, Young County: Talbot & Schmitz 1 J. R. Sloan, Sec. 2795, T.E.&L. Sur., pumped 170 bbl. pay 3,468 ft., sand, T.D. 3,507 ft.

Hoefle, Jack County: Hanlon-Buchanan 3 E. C. Porter, J. S. Porter Sur., pumped 519 bbl., pay 4,818, lime, T.D. 4,869 ft.

Hull-Silk, Archer County: Peterson & McCarthy 41 L. F. Wilson, B. E. Hall Sur. A-682, flowed 430 bbl., perf. 3,975-87 ft., acid 4,000 gal. T.D. 4,643 ft.

Loving, Young County: Chas. B. King 6 W. F. Brown, S. Tynes Sur. A-274, pumped 9 bbl., pay 538 ft., T.D. 539 ft., sand.

Post Oak, Jack County: Taubert-McKee and Sinclair Prairie 2 R. E. Boyd, Seth Hazel Sur. A-258, dry, T.D. 6,501 ft.

(Continued on Next Page)

EASTERN TEXAS

Offset to Quitman Discovery Cores Thick Saturated Section

DALLAS, Tex.—The Quitman pool of Wood County continues to hold the attention of oil men in the East Texas district. The second well in the pool, Shell Oil 1 Goldsmith, south offset to the discovery, has cored thick saturated sections of the Paluxy sand topped at 6,226 ft. and went into water at 6,420 ft. and halted at 6,432 ft. in water sand. Schlumberger was run preparatory to picking casing point. The well cored approximately 100 ft. of saturated section, broken with streaks of shale, similar to cores taken from the Coke pool, Paluxy sand producing area in the north part of the county. A fault was cut at about 5,700 ft., exact depth not available until results of electric log are known, and in the discovery well the fault was cut at 4,400 ft., while in the well to the north, Shell 1 Blalock, the fault was cut at about 2,500 ft. Elevation of the Shell 1 Goldsmith is 458 ft., 27 ft. lower on the surface than the discovery, but datum on top of the Paluxy is —5,768, against —5,766 in the pool opener. The north offset, Shell 1 Blalock, topped the Georgetown lime at 5,040 ft. and was drilling below 5,125 ft. Besides the two wells drilling, locations have been made for four more tests in the area.

In Nacogdoches County, Texas Co. 1 Strahan, 7 miles northeast of Nacogdoches, was taking potential test Saturday. The Pettit lime test in Shelby County, Humble 1 Harris, R. C. Farmer Survey, was coring for the Rodessa section at 6,230 ft. A. F. Carter 1 J. H. Hazel, 1½ miles north of Fruitvale in Van Zandt County, Paluxy test, found salt water in the Woodbine sand, drilled to 5,300 ft. in shale, and plugged back to 4,900 ft. to straighten hole.

EAST TEXAS COMPLETIONS

Wildcats

Kaufman County: C. F. Carter 1 S. D. Stanfield, Wesley Boles Sur., elev. 419 ft., sub-Clarksville 1,667-84 ft., W.B. 2,030 ft., dry, T.D. 3,880 ft.

Smith County: B. F. Phillips 1 Starnes, Samuel Epps Sur., elev. 407 ft., Woodbine 3,841-51 ft., Paluxy 5,470-80 ft., Glen Rose 5,760-70 ft., dry, T.D. 5,822 ft., sandy lime.

Fields

Chapel Hill, Smith County: Sinclair Prairie 1 L. C. Alexander, NW cor. H. K. Carson Sur., elev. 504, ft., flowed 150 bbl., ⅛-in. choke, pay 8,194-8,394 ft., Travis Peak lime 8,397 ft., T.D. 8,436 ft.

Hawkins, Wood County: Humble Oil 1-D Christian Women's Board of Missions, J. G. Heard Sur., elev. 424 ft., flowed 314 bbl. 25.6 gravity, pay 4,739-56 and 4,86-74 ft., T.D. 46,879 ft.

Kerens, Navarro County: John Hooser et al 1 A. M. Walker, J. Millican Sur., no shows, dry, T.D. 1,850 ft.

Tehuacana, Limestone County: Zephyr Oil 1-C Carrie Peeples, NE cor. Rozelia Scott Sur., elev. 512 ft., Woodbine 2,715 ft., Georgetown lime 2,980 ft., Edwards lime 3,350 ft., Trinity 3,620 ft., Glen Rose 3,723 ft., dry, T.D. 5,090 ft.

Muenster, Cooke County: Camball Oil 1 W. H. and L. Campbell, O. F. Leverett Sur. A-607, dry, T.D. 804 ft.

Swastika, Archer County: Rathke 2 W. E. Rodgers, Sec. 1596, T.E.&L. Sur., dry, T.D. 1,296 ft.

Thornberry, Clay County: Metzner & Anderson 1 T. C. Thornberry, Lot 11, Thornberry subd., dry, T.D. 1,206 ft.

Watson, Clay County: Roy Lee, trustee 3-A T. Watson, W. A. Farris Sur. A-148, dry, T.D. 6,023 ft.

Republic Natural Gas 1 J. T. Gates, SW cor. T. Toby Sur. A-693, dry, T.D. 5,537 ft.

Wear, Archer County: Grace & Grace 2 M. Wear, Lot 8, Crawford subd., dry, T.D. 1,322 ft.

Mississippi Lime Pay in Stephens County Test

ABILENE, Tex.—Texas Pacific Coal & Oil Co. 12 S. H. Hill, Section 1122, T.E.&L. Survey, Stephens County, flowed at the rate of 2,142 bbl. per day from pay in the Mississippi lime topped at 4,230 ft. This is the first well to produce from this pay in this pool, although 2 miles northeast, Christie Brothers have one well brought in last year in the Donnell pool, which has been offset on the east and west by dry holes. The Mississippi lime carried shows of oil in the Stribling pool, farther to the west in Stephens County, which was developed in 1940. Performance of the new strike by Texas Pacific has revived interest in Stephens and Young counties, and it is likely that this year will see several tests now producing from the Caddo lime carried deeper. It was the Caddo lime pay in Stephens County which first reacted favorably to acid treatment before it became common practice to treat lime-pay wells. The Mississippi lime has shown favorable reaction to acid treatment in North Texas.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Jones County: Fain & McGaha and S. C. Herring 1 W. E. Petty, Lot 29, Lge. 124, Gimes County School Land, elev. 1,838 ft., dry, T.D. 2,880 ft.

Stephens County: Daniel Prod. 1 Pratt estate, Sec. 1294, T.E.&L. Sur., elev. 1,161 ft., pumped 35 bbl., pay 3,285 ft., Caddo lime, acid 500 gal., T.D. 3,295 ft., lime. Discovery.

Fields

Akard, Jones: Tex. Pac. Coal & Oil 2 C. H. Stokes, Sec. 137, G. Martinez Sur., dry, T.D. 2,165 ft. Correction.

Eliasville, Stephens County: Tex. Pac. Coal & Oil 12 S. H. Hill, Sec. 1122, T.E.&L. Sur., flowed 2,142 bbl., ¼-in. choke, Mississippi lime 4,230 ft., acid 2,000 gal., T.D. 4,236 ft. New pay.

Rock Crusher, Coleman: J. O. Fox & Sons 1 Mrs. Maggie Powell, B.B.B.&C. Ry. Sur. A-23, dry, T.D. 3,436 ft., lime.

Poor Farm, Shackelford County: R. H. Roark 2 Shackelford County Poor Farm, Sec. 4, Blind Asylum Lands, dry, T.D. 981 ft.

Two pools in Jones County are due extensions this week. West outpost to the Stith pool, Fain & McGaha and Jones & Stasney 2 Canon, Lot 81, De Witt County School Land Survey, is showing for a good producer although gage is not available. The South Noodle pool, in southwestern Jones County, is being extended ½ mile east by Cardinal Oil 2 Williamson, Section 31, Block 18, T.&P. Ry. Survey, which filled with oil and headed from Swastika sand pay at 3,075-80 ft. The well drilled into water at 3,081 ft. and was testing for water shutoff.

APPALACHIAN FIELDS

Pleasants County Well Finds Gas Showings in Oriskany

PITTSBURGH, Pa. — An important test in Pleasants County, West Virginia, is drilling through the Oriskany sand with a showing of gas and no salt water. In Southwest Pennsylvania, there was one fair gas well.

SOUTHWEST PENNSLVANIA

On Chestnut Ridge in South Union Township, Fayette County, new Penn Development Co., William E. Snee et al are drilling at 6,251 ft. in 2 Indian Creek Coal Co. and the progress is slow on account of caving. Here, Peoples Natural Gas Co. cleaned out 1 Walters to bottom 6,226 ft. and shut down for equipment to resume.

In Maryland, the test of William E. Snee et al completing old 1 Speicher to the lower Devonian reached 5,983 ft. It is located on the Accident dome in Garrett County.

SOUTHWEST PENNSYLVANIA COMPLETIONS

Armstrong County, Plum Creek Township: John Wray et al 1 Martin Fiscus, 65,000 cu. ft. gas, Bradford sand 3,380-3,422 ft., gas 3,420 ft., T.D. 3,434 ft.

Wayne Township: R. C. Galbraith 1 Mrs. G. W. Walls, 164,000 cu. ft. gas, Murraysville and Hundred Foot sands, T.D. 2,722 ft.

Clarion County, Monroe Township: United Natural Gas Co. 5 Wilson, McLaughlin & Colliner, small gas well, T.D. 2,543 ft.

Red Bank Township: Owens-Illinois Glass Co. 1 Harvey Shaffer, 30,000 cu. ft. gas, Speechley sand, T.D. 3,124 ft.

Fayette County, German Township: Peoples Natural Gas Co. 1 Thomas Seese, dry, through Fifth sand, T.D. 3,506 ft.

Peoples Natural Gas Co. 2 Thomas Seese, dry, T.D. 2,752 ft.

Indiana County, Young Township: T. W. Phillips Gas & Oil Co. 1 R. & P. Coal Co., 103,000 cu. ft. gas, Thirty Foot sand at 2,122 ft., T.D. 2,294 ft.

Apollo Gas Co. 1 W. N. and J. C. Armstrong, dry through Thirty Foot sand, T.D. 2,242 ft.

Washington County, South Franklin Township: Foley & Williams 1 H. L. Ramsey, 1,400,000 cu. ft. gas, Salt sand 1,378 ft., gas 1,378 ft., gage 49,800 cu. ft., gas 1,382 ft., gage 856,000 cu. ft., gas 1,383 ft., gage 1,400,000 cu. ft., R.P. 315 lb., T.D. 1,384 ft.

WEST VIRGINIA

The deep test of J. C. Benedum on the W. W. Campbell farm in Union district, Pleasants County, topped the Oriskany sand and had a showing of about 50,000 cu. ft. of gas but 25 ft. in the sand no added gas was found. It is located on the west flank of the Wick anticline and is located 3.9 miles south 39° 30′ and 2.32 miles west 80°5′ with a starting elevation of 610 ft. The Corniferous lime was topped at 5,304 ft. and the Oriskany 5,517 ft. with the gas show at 5,518 ft. So far in the test salt water was not present.

In Union district, Mason County, the test of Godfrey L. Cabot, Inc., is continuing and has reached 5,742 ft. or 224 ft. below the base of the Clinton sand.

In Raleigh County, Columbian Carbon Co. will case the deep test on the Rowland Land Co. in Marsh Fork district at 5,933 ft. or 15 ft. below the top of the Corniferous lime. In Oceana district, Wyoming County, Godfrey L. Cabot, Inc., reached 5,708 ft. in the test on the Watts Land Co. and is fishing for the bailer.

WEST VIRGINIA COMPLETIONS

Cabell County, McComas district: Jesse H. Chaffin 1 H. W. Hinchman, 94,000 cu. ft. gas, Big lime 1,364 ft., Injun 1,532 ft., Berea 2,188 ft., brown shale 2,900 ft., gas from brown shale, T.D. 3,282 ft.

Calhoun County, Sherman district: W. V. Knight 2 Lawrence Wade (F. B. Farrell), 1 bbl., Injun sand, T.D. 2,161 ft.

Doddridge County, McClellan district: Coffman Oil & Gas Co. 2 F. S. Estlack, 134,000 cu. ft. gas, Big lime 2,200 ft., Injun 2,300 ft., Gordon sand 3,030 ft., T.D. 3,095 ft.

Kanawha County, Poca district: South Penn Natural Gas Co. 2 A. L. Robinson, dry, Big lime 1,676-1,926 ft., Injun 1,826-1,875 ft., show oil 1,748 ft., show gas 1,775 ft., T.D. 1,880 ft.

Gilmer County, DeKalb district: South Penn Natural Gas Co. 5 John Lewis, dry, through Maxton sand, T.D. 1,786 ft.

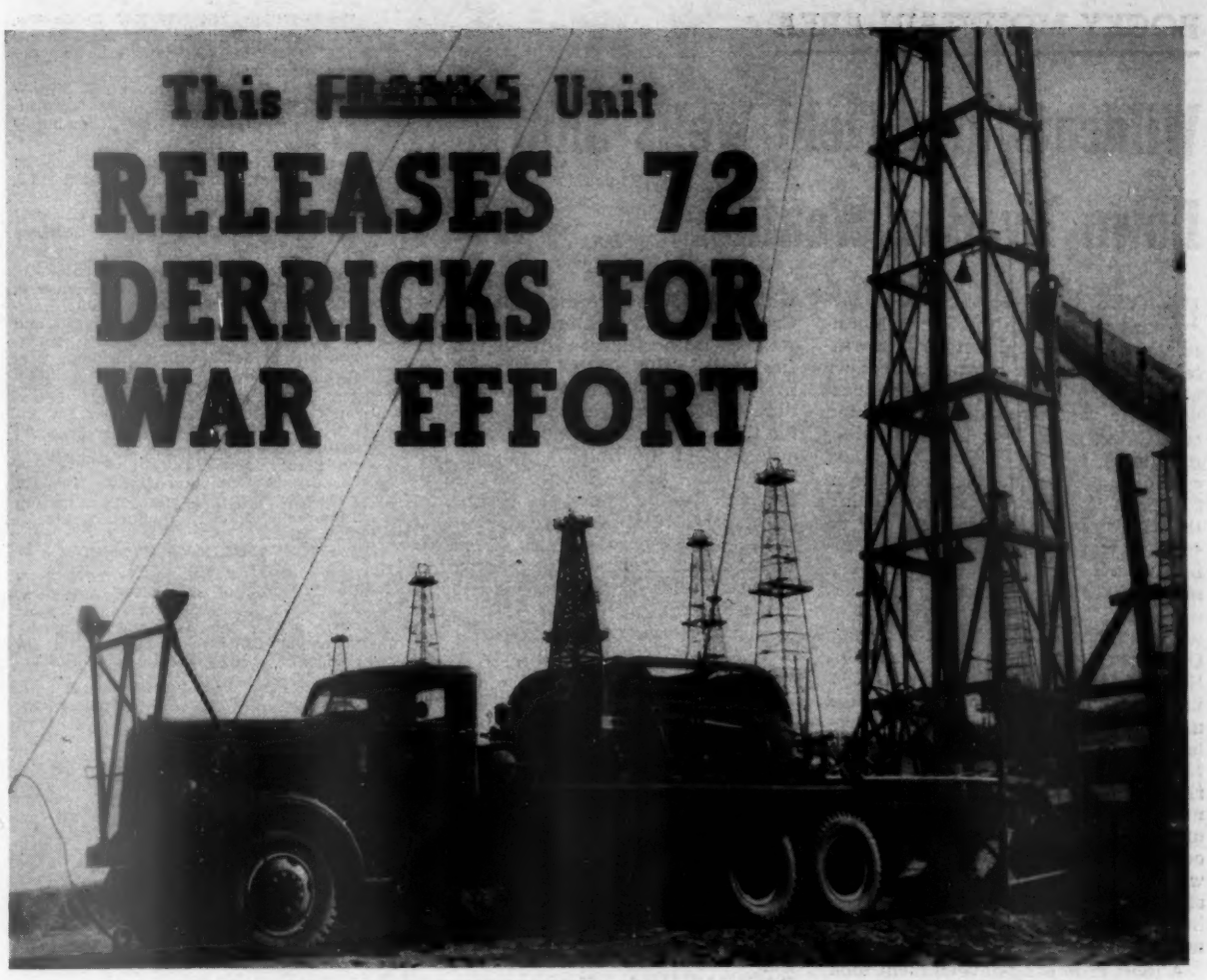
Lincoln County, Jefferson district: David Gas Co. 1 David Miller, drilled deeper from 2,153 ft., 622,000 cu. ft. gas from brown shale topped at 3,220 ft., T.D. 3,515 ft.

Mingo County, Warfield district: C. S. Black, trustee, 1 John Brewer, 696,000 cu. ft. gas, Maxton sand, T.D. 1,407 ft.

Ritchie County, Grant district: F. S. Deem 27 L. C. Stephens, 1,500,000 cu. ft. gas Keener sand, Maxton sand 1,785 ft., Big lime 1,840 ft., show oil 1,823-25 ft., T.D. 1,963 ft.

ORISKANY GAS FIELDS

Jackson County, Washington district: United Fuel Gas Co. 5142 L. E. Young, dry, Corniferous lime 5,149 ft., Oriskany 5,266 ft., show gas 5,281 ft., salt water (1 bailer an hr.) 5,281 ft., T.D. 5,320 ft.



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ROCKY MOUNTAIN AREA

Wildcats and Field Wells Shut Down By Bad Weather

DENVER, Colo.—Most of the important wildcats in the Rocky Mountain area are shut down for the winter, this being the normal procedure at this time of the year. The past week the weather laid a heavy hand on drilling operations in the producing fields where ordinarily drilling continues throughout the season. Northern Montana was hardest hit, the thermometer dropped to 30° to 40° below zero in Cut Bank to 45° below in Kevin-Sunburst. In the last named field all wells, 24 in number, were idle. In Cut Bank, 15 operations were idle and two wells were drilling. One completion was made in Cut Bank, A. B. Cobb & Co. 2 Tribal-202, but it proved to be too cold to make a swabbing test. The General Petroleum Corp. wildcat on Horse Creek, 1 Whittaker, was delayed by the derrick being blown down. It topped the upper Sundance at 5,386 ft., and was drilling at 5,910 ft. when the accident occurred. Rig is being rebuilt. The weather also delayed the Montana Oil and Gas Producers Association meeting at Shelby, which has been postponed three times.

A most promising development took place in the British-American Oil Producing Co. 1-E Tribal, NE NW NW 5-3n-1w, a wildcat on the Steamboat Butte high, 3 miles northwest of the nearest Tensleep producer in the Pilot Butte field. It topped the Dakota at 4,167 ft. and after drilling a few feet deeper, made a drill-stem test. It showed 370 ft. of oil and 30 ft. of muddy water in 1 hour. The Dakota normally produces a light oil. An outcrop 10 miles to the north of the wildcat reveals a 48-ft. sand of good quality. The Muddy sand, just above the Dakota, although not as thick a sand as in the Pilot Butte field, also showed oil saturation and there was some gas in the Wall Creek sands above the Muddy. The test is headed for the Tensleep.

Another important wildcat, on the Tocito structure, San Juan County, Northwest New Mexico, got under way the past week in Continental Oil Co. 1 Tocito, SW SW NE 17-26n-18w, unsurveyed, a joint operation with the Stanolind Oil & Gas Co. and the Standard Oil Co. of Texas. It cemented the 13⅜-in. pipe at 321 ft. It is headed for the Pennsylvanian at around 5,000 ft.

The Wasatch Production Co., a subsidiary of the Wasatch Refining Co., which operates a refinery at Woods Cross, Utah, and is interested in other western refineries, has spudded in its first well in the North La Barge field in its plans to develop its own production. It was organized a year ago for that purpose and acquired a 6,000-acre unit of the North La Barge Oil Co. in Sublette County, the Rex Lake field in Albany County, the producing acreage of the Mid-American Oil Co. in the Sheep Creek field, Fremont County, and 12,000 acres of potential acreage in the Big Piney district in Sublette County.

WYOMING COMPLETIONS

Byron, Big Horn County: Ohio Oil Co. 1 Pryde-Willey, NE NW NW 25-56n-97w, T.D. 5,352 ft., Embar 5,122 ft., Tensleep 5,187 ft., 7-in. 5,289 ft., 312 bbl. per day after acid.

Taylor Oil Co. 2 Government, C SE SW Lot 7, 25-56n-97w, T.D. 5,469 ft., Tensleep 5,390 ft., 5-in. 5,369 ft., pumped 350 bbl.

La Barge, Sublette County: Texas Co. 1-CX Government, SE NW NW 34-27n-113w, T.D. 1,035 ft., pumped 60 bbl.

Texas Co. 2-BX Government, NE NW NW 34-27n-113w, T.D. 1,080 ft., flowed 66 bbl.

Moorcroft, Crook County: Continental Oil Co. 1 Coltharpe, C SE NW 18-51n-66w, T.D. 3,510 ft., tested all possible horizons down to Ordovician, plugged and abandoned, tested 2,500,000 cu. ft. nitrogen gas at 1,492-1,500 ft. through perforated casing.

Oregon Basin, Park County: Yale Petroleum Corp. 3 Atherly, SW NW SW 33-52n-100w, T.D. 3,586 ft., Embar 3,515 ft., 6⅝-in. 3,547 ft., pumped 300 bbl.

Poison Spider, Natrona County: Investors Oil Co. 18 Government, SW NW SW 2-33n-83w, T.D. 2,456 ft., 5½-in. on top Tensleep at 2,346 ft., pumped 60 bbl.

MONTANA COMPLETIONS

Cut Bank, Glacier County: A. B. Cobb & Co. 2 Tribal-202, C SE NE 24-32n-6w, T.D. 3,041 ft., 7-in. 2,992 ft., no Sunburst sand, Cut Bank 2,876-3,038 ft., main pay 3,020-38 ft., 2,000 ft. oil in hole, no swabbing test.

MICHIGAN

Fork and Evart Pools Put Under Proration

SAGINAW, Mich.—Heavy snows and subzero weather combined have curtailed Michigan oil and gas field operations in recent days with the result that the past week saw only three completions.

In Lansing Friday, P. J. Hoffmaster, state conservation director and director of wells, ordered proration limits on the state's two new pools. Acting on advice of the Oil Advisory Board, Mr. Hoffmaster made the withdrawal limit 262½ bbl. a day from any well in a 40-acre tract in Fork Township, Mecosta County, and the Evart field in Mecosta County. At the same time, he announced that due to the war-stimulated demand for Michigan oil, existing proration will be continued in the Adams, Winterfield, Headquarters and Reed City fields.

While there is some basis to a belief that reduction of the withdrawal allowed in the four fields would prolong their productivity, there also is evidence to the contrary, Mr. Hoffmaster said, and because of the need the allowable withdrawal will not be curtailed.

Mr. Hoffmaster added that proposals to restore casinghead gas under pressure to Reed City field wells have been discarded as impractical. The idea was to prolong life of the field. To cover the field, he explained, would require 2,600 tons of unavailable steel. The decision was based on a report of an engineering committee, which was instructed to determine whether the casinghead gas could be marketed. Estimates are that only 10 per cent of an estimated 25,000,000 cu. ft. of such gas daily is utilized now.

Talbot Oil Co. completed a well producing 40 bbl. a day on pump in the Kawkawlin-Bay County field and Socony-Vacuum Oil Co., Inc., brought in a producer in the Bangor-Van Buren area which pumped 42 bbl. natural the first 22 hours. Daily Crude Oil, which completed a test in Winterfield-Clare as a dry hole, reported it plans to redrill. Little new development before spring is in prospect in the state.

MICHIGAN COMPLETIONS

Bay County, Kawkawlin Township: Talbot Oil Co. 2 Schwab, C S½ SE NE 28-15n-4e, pumped 40 bbl., acidized, T.D. 2,937 ft.

Clare County, Winterfield Township: Daily Crude Oil 2 Schuett, C W½ NW SW 28-20n-6w, dry, T.D. 1,703 ft.

Van Buren County, Bangor Township: Socony-Vacuum Oil Co., Inc., 1 Funk, S½ NW SE 9-2s-16w, pumped 43 bbl. natural first 22 hr., with salt water, T.D. 1,014 ft.

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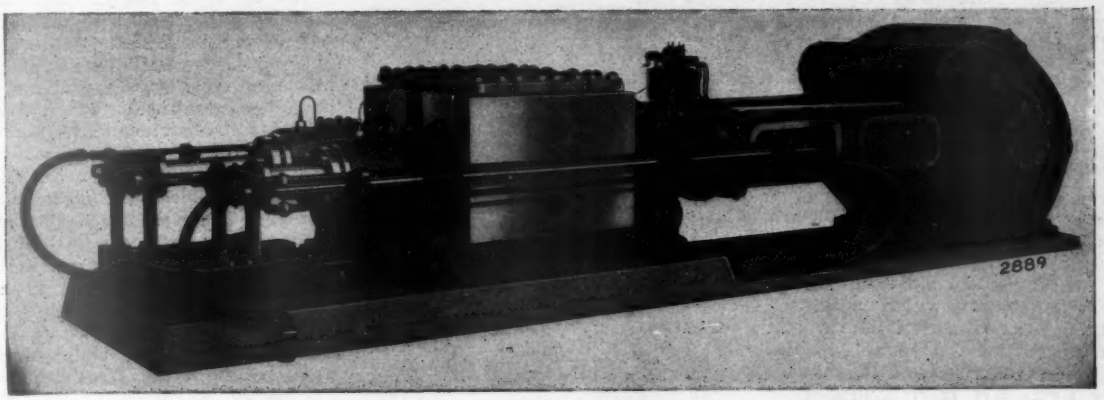

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CALIFORNIA

Guijarral Hills Well Cores Oil Sand and Prepares to Test

LOS ANGELES, Calif.—A little of the tension that has existed for several months because of the inability of prospectors to discover new fields was removed last week when Standard Oil Co. announced the finding of an excellent looking oil sand in its 82-29-F Pleasant Valley Farms in the Guijarral Hills section of Fresno County in 29-20s-16e, and the finding of another possible gas zone in 38-16 Gill of Texas Co. in the Mendota section of Madera County in 16-13s-16e.

Standard Oil Co. has landed pipe in its potential producer in the Guijarral Hills section and is making preparations to conduct an early production test. This wildcat, which is located about 1 mile southeast of the southeastern tip of the Coalinga Nose field, cored oil sand at 8,942-65 ft. and the water string has been cemented at 8,940 ft. A formation test made several days ago indicated that commercial production could be anticipated. It is believed that the oil sand found, and the bit was still in the pay when drilling operations were concluded, is the equivalent of the Gatchell sand that has been found so highly productive in the Coalinga Nose field. This has not been definitely determined and must be held in abeyance pending further information as the Guijarral oil sand is slightly different from the Gatchell, which is characterized by high porosities and permeabilities. The Guijarral oil sand is smaller grained and apparently lacks the porosity of the true Gatchell. It is more like the McAdams sand cored in the northwestern tip of the Kettleman North Dome field. Prospectors at present are not concerned with the identification of the oil sand as they are more interested in the fact that commercial production is in the offing.

Madera County Test

The Gill wildcat of the Texas Co. in Madera County does not present as much encouragement as Standard's Guijarral wildcat. To date Texas has found a probable commercial gas zone higher up in the hole and an oil sand that tested wet. Late this week, the company encountered another gas sand at 8,960 ft. It is not known whether this new gas sand is present in commercial quantities but this should be determined in the near future. The Eocene was logged quite high up in this wildcat and in view of this the hole at present is probably in Upper Cretaceous. The most promising thing in connection with this wildcat is the fact that an oil sand was cored in the Eocene as this leads to the assumption that this wildcat may possibly be an edge well, in which event a test drilled at a point structurally higher might find commercial oil production.

SAN JOAQUIN VALLEY COMPLETIONS

Antelope Plains, Kern County: Shell Oil Co., Inc., 3-6 Williams, 6-28s-20e, flowed 229 bbl. 18.2-gravity, pressures 250/6,399 lb., T.D. 2,268 ft., perf. 2,190-2,263 ft., Williams zone of Miocene age.

Belridge, South, Kern County: Ohio Oil Co. 11 Hopkins fee, 4-29s-21e, pumped 21 bbl. net, 14.1-gravity, 82 per cent cut, T.D. 1,101 ft., perf. 650-1,032 ft., upper Belridge zone of Pliocene age.

Ohio Oil Co. 13 Hopkins fee, 4-29s-21e, pumped 26 bbl., 14.1-gravity, T.D. 730 ft., perf. 543-704 ft., upper Belridge zone of Pliocene age.

Ohio Oil Co. 14 Hopkins fee, 4-29s-21e, pumped 56 bbl., 14.4-gravity, T.D. 860 ft., perf. 633-858 ft., upper Belridge zone of Pliocene age.

Coalinga, East, Fresno County: Shell Oil Co., Inc. 14-40 fee, 14-19s-15e, pumped 524 bbl., 17-gravity, T.D. 2,796 ft., perf. 2,705-80 ft., East Coalinga zone of Miocene age.

Jasmine wildcat district, Kern County: Trico Oil & Gas Co. 1 Amalgamated, 17-25s-28e, abandoned in fine gray sand, T.D. 1,096 ft., top Pyramid sand 1,022 ft., no oil, showings logged.

Kern River Front, Kern County: General Pet. Corp. 45 Young, 14-28s-27e, pumped 104 bbl., 14.2-gravity, 30 per cent cut, T.D. 1,875 ft., perf. 1,695-1,874 ft., Kern Front zone of Pliocene age.

Standard Oil Co. 9-9 fee, 9-28s-27e, pumped 117 bbl., 14-gravity, T.D. 2,895 ft., perf. 2,650-2,873 ft., M point 2,428 ft., N point 2,545 ft., Q point 2,652 ft., Kern Front zone of Pliocene age.

Standard Oil Co. 33-15 fee, 15-28s-27e, pumped 45 bbl., 13.5-gravity, T.D. 2,525 ft., 100 mesh perf. 2,336-2,523 ft., M point 2,183 ft., N point 2,282 ft., Q point 2,340 ft., R point 2,445 ft., S point 2,496 ft., Kern Front zone of Pliocene age.

Midway-Sunset, Kern County: Chanslor-Canfield Midway Oil Co. 16-35 fee, 35-31s-22e, dry, T.D. 2,895 ft., perf. 2,685-2,891 ft., P.B. 2,825 ft., P.B. 2,745 ft., pumped water.

Marvic and associates 3 M.S., 16-31s-22e, pumped 50 bbl., 12.5-gravity, T.D. 1,472 ft., P.B. 1,237 ft., perf. 1,130-1,237 ft., Midway-Sunset zone of Pliocene age.

Mountain View wildcat district, Kern County: Di Giorgio Fruit Co. 2 Mountain View, 12-31s-29e, abandoned in granite 3,125-77 ft., no showings of importance logged.

Mount Poso, Kern County: Shell Oil Co., Inc., 36 Vedder, 9-27s-28e, pumped 73 bbl., 15.8-gravity, T.D. 1,910 ft., perf. 1,839-1,910 ft., Vedder zone of Miocene age.

Riverdale, Fresno County: Amerada Pet. Corp. 74-16 Young, 16-17s-19e, flowed 162 bbl., 42.2-gravity, 1,349,000 cu. ft. gas, 12/64-in. bean, pressures 2,200/2,500 lb., T.D. 6,900 ft., P.B. 6,772 ft., McClure 5,267 ft., Temblor 5,552 ft., Lawton zone of Miocene age.

Round Mountain, Kern County: Bishop Oil Co. 1 A. Thomas, 12-28s-28e, pumped 120 bbl., 14.2-gravity, T.D. 1,865 ft., perf. 1,843-65 ft., Vedder zone of Miocene age.

Honolulu Oil Corp. 42 fee, 18-28s-29e, pumped 120 bbl., 14.5-gravity, T.D. 2,018 ft., perf. 1,971-2,015 ft., Vedder zone of Miocene age.

Suisun wildcat district, Solano County: Standard Oil Co. 1-2 Suisun Community, 36-4n-2e, abandoned because of a combination of unfavorable geological conditions and a twistoff which left bit and drill pipe in hole, fish not recovered, T.D. 6,007 ft.

LOS ANGELES BASIN

The Texas Co. has just spudded in its third test well in the La Mirada section of Orange County after being held up for several days because of inclement weather. This wildcat will have the benefit of two other wildcats drilled and abandoned by the Texas Co. as well as logs of a series of other tests in the same general area. Neither of the two wildcats drilled in this region by Texas showed commercial production of oil or gas but did show enough to justify additional drilling. This large tract has always been regarded with favor but to date no production has been developed.

The present wildcat is 3-A McNally in 22-3s-11w, and is the third well to be drilled by the Texas Co. on the McNally property.

Gilmore Island Work Delayed

Shell Oil Co., Inc., lost several days late last week due to the weather and consequently was delayed in finishing rigging up operations in 1 Verne Community which will be drilled in the Gilmore Island section of metropolitan Los Angeles as a deep test to the Miocene. A present the derrick is completely sheathed with asbestos and rock wool and spud is expected momentarily. This well will be drilled with electricity to kill any noise, eliminate steam exhaust and otherwise make for easy drilling. Shell is taking considerable pains to keep this work from offending anyone and nothing is being left undone that could contribute to this aim. Spectators will be kept away from the derrick and rig by a high board fence and the only indication that drilling is actually under way will be a few noises. The crew has been especially picked to guarantee efficient and noiseless drilling.

LOS ANGELES BASIN COMPLETIONS

Huntington Beach, Orange County: Southwest Exploration Co. 49 State, 4-6s-11w, pumped 203 bbl., 23.4-gravity, T.D. 5,728 ft., perf. 5,035-5,728 ft., completed in state tideland accumulation by directional drilling.

Montebello, Los Angeles County: Standard Oil Co. 91 Baldwin, 1-2s-12w, pumped 30 bbl. oil, 20.8-gravity, 81 bbl. water, T.D. 2,825 ft., P.B. 2,700 ft., Baldwin zone of Pliocene age.

Playa Del Rey, Los Angeles County: Union Oil Co. 18 Vidor, 27-2s-15w, pumped 37 bbl., 22.8-gravity, T.D. 6,106 ft., perf. 6,013-6,104 ft., top nodular shale 5,956

ft., conglomerate 6,038 ft., basement schist 6,077 ft., Miocene 5,250 ft., lower zone of Miocene age.

Potrero wildcat district, Los Angeles County: Duquesne Oil Co. 1 Eunice, 3-3s-14w, abandoned in gray sand, T.D. 4,084 ft., no showings.

Wilmington, Los Angeles County: Long Beach Oil Dev. Co. 42-W Harbor, 16-3s-9w, pumped 290 bbl., 15.3-gravity, T.D. 3,481 ft., perf. 3,099-3,333 ft., 3,392-3,476 ft., Rangor zone of Pliocene age.

Yorba Linda, Orange County: Shell Oil Co., Inc., 35-16 Olinda fee 4, 16-3s-9w, pumped 5 bbl. net, 13.9-gravity, 56.9 per cent cut, T.D. 2,484 ft., P.B. 2,460 ft., perf. 2,105-71 ft., 2,286-2,331 ft., 2,371-2,457, P.B. 2,460 ft., gun perf. 2,093-95 ft., Olinda zone of Miocene age.

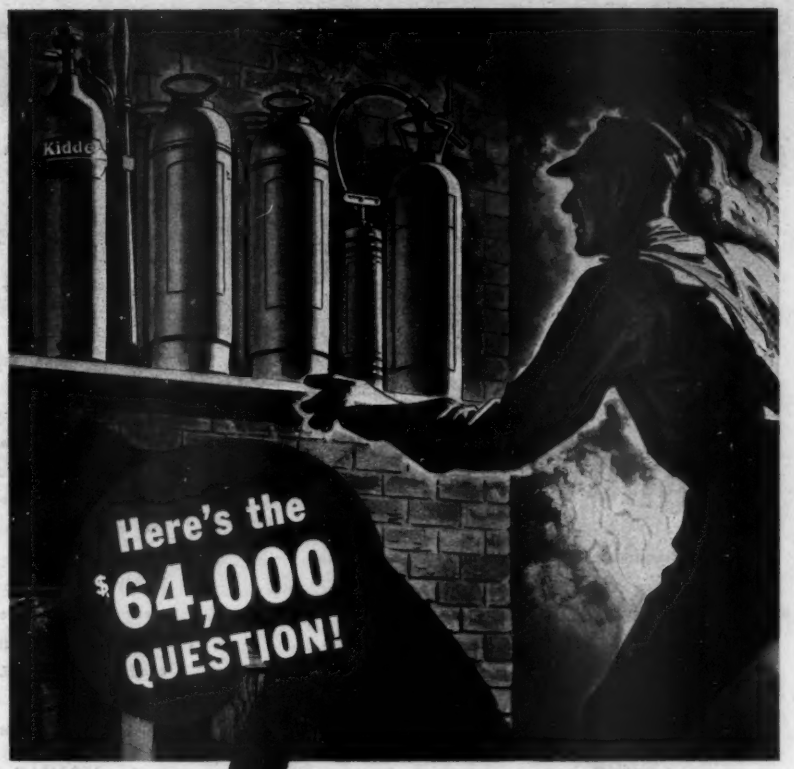
COASTAL DISTRICT

Tide Water Associated Oil Co. is starting an important outpost in the Aliso Canyon field of Los Angeles County and one which may substantially enlarge the productive limits if successfully completed as a large flowing well. Last year, the company drilled and completed 1 Standard-Sesnon about 1 mile west of nearest production. Now the company is moving another 2,500 ft. west of 1 Sesnon and will drill a second well. The upper and lower Modelo zones that are productive in other wells in the Aliso Canyon field were absent beneath the Sesnon property but the company picked up a new zone that is deeper than any other zone heretofore produced in the field. This zone will be known as the Sesnon zone and it is quite likely it will prove to be the best in the field from a production standpoint. This property is owned in fee by Standard Oil Co. and is being operated by Tide Water Associated Oil Co. on an interest basis. West of the Sesnon poperty, Standard owns another 320 acres in fee and it is not at all impossible that production may also be developed on the Brown fee property.

R. E. Havenstrite is still working with 2 Barnes in the Del Valle field of Los Angeles County and is making progress with the result this well may be ready for a production test shortly. This well was carried down to 9,870 ft. in search of deep production and although a new zone was found at this depth it tested wet which made it necessary for the operator to plug back and take production in one of several zones logged higher up in the hole. The well looked rather good during the course of work but when given a chance to produce it failed miserably. The well under way at present, 2 Barnes, almost precludes the development of deep Miocene production although another location might prove productive.

COASTAL DISTRICT COMPLETIONS

Rincon, Ventura County: Chanslor-Canfield Midway Oil Co. 10-C Hobson, 17-3n-24w, abandoned because of fishing job, top of oil sand 9,193 ft., cored oil sand 9,716-88 ft., steep dips 10,065 ft., hole drifted 120 ft. northeast, P.B. 1,700 ft., redrilled to 9,322 ft., twisted off drill pipe, could not recover, top fish 4,987 ft., original hole 10,065 ft.



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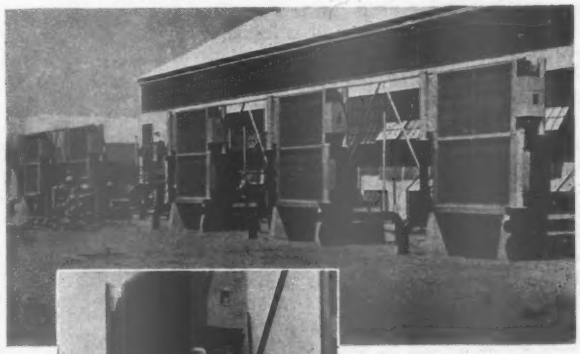

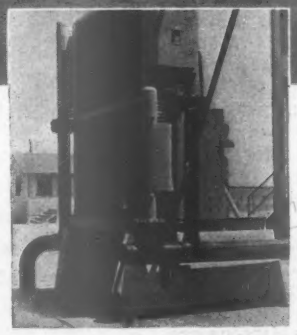

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PERMIAN BASIN, PANHANDLE

Saturation Found Southwest of Means Pool, Andrews County

MIDLAND, Tex. — DeKalb Agricultural Association 1 A. C. Means, wildcat 3 miles northeast of the town of Andrews and a like distance southwest of the Means pool, cored from 4,860-70 ft. and recovered 10 ft. of saturated sand. The next core from 4,870-85 ft. recovered 8 ft. saturated sand. 4 ft. sandy lime bleeding oil, and 3 ft. hard sandy lime. The well topped the San Andres lime at 4,380 ft. Elevation is 3,175 ft. Nearest producer in the Means pool topped the pay at 4,517 ft. with elevation of 3,155 ft. It is not definitely decided just what sand is showing oil in the DeKalb test. New wildcat location for Andrews County is Skelly Oil 1-K University, SW SW Section 28, Block 9, University Survey, 2 miles northeast of the Emma pool. Contract depth is 5,500 ft.

The Gaines County discovery from the Clear Fork lime, Shell 1 Leaverton, SW SW Section 458, Block G, C.C.S.D.&R.G.N.G. Ry. Survey, had dismantled derrick and was installing pumping unit. The Seminole pool reported one completion and one new location this week, first activity in that pool for several months.

In Pecos County, Anderson-Prichard 1-A Masterson, Section 24, Block 140, T.&St.L. Survey, southwest of the Apco-Warner pool, had drilled to 4,150 ft. in lime. Magnolia 1-29 Eaton, Section 29, Block 3, H.&T.C. Ry. Survey, southwest of the Abell pool, had progressed to 5,701 ft. in lime and chert. Gulf 1 Rooney Mercantile Co., Section 82, Block OW, northwest of Fort Stockton 8 miles, was drilling in lime about 2,200 ft.

Failure looms for the Scurry County test being drilled by Col-Tex Refining Co., No. 1 Stewart, Section 211, Block 97, H.&T.C. Ry. Survey, which was due to be abandoned at a total depth of 4,000 ft.

Three new wildcat tests were staked in the district last week. Sterling County, which has two deep wildcats under way, now gets a shallow test to be drilled by B. C. Mann, NW SW Section 122, Block 6, H.&T.C. Ry. Survey, on the W. B. Atkinson ranch, to 2,500 ft. In Edwards County, just south of the Sutton County line, location has been made for W. C. Moore 1 Holman, SE SE Section 25, C.C.S.D. &R.G.N.G. Ry. Survey, ½ mile southeast of a test drilled by Phillips Petroleum which topped Ellenburger at 7,565 ft. and was drilled to a total depth of 8,129 ft. In Hudspeth County Albert R. Jones 1 Elisha Mowry is located 2,179 ft. from the south line and 685 ft. from the east line of Section 36, Block 70, Township 2s, T.&P. Ry. Survey, 11 miles northwest of Salt Flats.

WEST TEXAS COMPLETIONS

Wildcats

Runnels County: Pawnee Royalty Co. 1 L. A. David, NW NE Sec. 330, F. J. Ford Sur., elev. 1,786 ft., dry, T.D. 2,735 ft., lime.

Fields

Embar (Ellenburger), Andrews County: Phillips Pet. 30 University-Andrews, SW NE Sec. 30, Blk. 10, University Sur., elev. 3,254 ft., flowed 374 bbl., ¼-in. choke, pay 7,930 ft., P.B. 7,949 ft., T.D. 7,955 ft., dolomite.

Phillips Pet. 33 University-Andrews, NW NE Sec. 3, Blk. 10, University Sur., elev. 3,239 ft., flowed 437 bbl. 44.2 gravity, pay 7,875 ft., T.D. 7,957 ft.

Seminole, Gaines County: Mabee O. & G. 3 Austin, SE NW Sec. 190, Blk. G, W.T. Ry. Sur., flowed 552 bbl., pay 5,150 ft., T.D. 5,225 ft.

Slaughter, Cochran County: J. C. Hawkins 23-A Mallet, NE Lab. 16, Lge. 47, Edwards County School Land, elev. 3,653 ft., flowed 615 bbl. 32 gravity, 4,920 ft., T.D. 4,965 ft., lime.

Devonian Oil 24-3 Duggan, SE Lab. 3, Lge. 55, Oldham County School Land, elev. 3,685 ft., flowed 864 bbl., pay 4,974 ft., T.D. 5,025 ft., lime.

Slaughter, Hockley County: J. C. Hawkins 18-A Mallet, NE Lab. 22, Lge. 47, Edwards County School Land, elev. 3,623 ft., flowed 726 bbl., acid 11,500 gal., pay 4,930 ft., T.D. 4,978 ft., lime.

T. F. Morrow 15 Mallet, NE Lab. 20, Lge. 48, Edwards County School Land, elev. 3,489 ft., flowed 408 bbl., acid, pay 4,860 ft., T.D. 4,964 ft., lime.

Texas Co. 6-F Slaughter, NE Lab. 81, Lge. 37, Zavalla County School Land, flowed 1,493 bbl., acid, pay 4,930 ft., T.D. 5,000 ft., lime.

Taylor Link, Pecos County: David Breeding 3-11 University, NE SE Sec. 11, Blk. 18, University Sur., elev. 2,484 ft., pumped 35 bbl. 30 gravity, pay 1,571 ft., acid 3,000 gal., T.D. 1,593 ft., lime.

O'Neal, Pecos County: Owen C. Matthews 1 C. J. O'Neal, Sec. 74, Blk. 10, H.&G.N. Ry. Sur., elev. 2,440 ft., flowed 61 bbl., pay 1,636 ft., TD. 1,657 ft.

Wasson, Gaines County: Bay Pet. and Carl B. King 1 T. A. Blair, NW SE Sec. 39, Blk. AX, Public School Lands, elev. 3,521 ft., flowed 486 bbl. 34.6 gravity, acid, pay 4,960 ft., T.D. 5,027 ft., lime.

West Fuhrman, Andrews County: N. G. Penrose et al 1-D University, NE NW Sec. 10, Blk. 10, University Sur., elev. 3,227 ft., flowed 132 bbl. 32 gravity, shot 420 qt., pay 4,445 ft., T.D. 4,627 ft., lime.

Phillips Pet. 1 University, NW NW Sec. 2, Blk. 10, University Sur., elev. 3,219 ft., flowed 128 bbl., acid 2,500 gal., pay 4,460 ft., T.D. 4,575 ft., lime.

SOUTHEAST NEW MEXICO

HOBBS, N. M.—Preparations were under way to deepen from a total depth of 8,524 ft. Olsen and Atlantic 1 Langlie, deep project which had been shut down for orders for a week. In Quay County, Stanolind Oil & Gas Co. 1 J. W. Fuller, NE NE 25-8n-30e, was drilling below 3,415 ft. in shale. The test is projected to the Ordovician at about 7,000 ft. The wildcat test of B. H. Nolen 1 Snyder, NE NE 29-19s-36e, west of the Monument pool, was drilling at 2,515 ft. in salt.

SOUTHEAST NEW MEXICO COMPLETIONS

Jackson-Grayburg, Eddy County: Skelly Oil 1-B Dow, NW NW 21-17s-31e, elev. 3,741 ft., flowed 455 bbl., pay 2,950-3,555 ft., T.D. 3,555 ft.

PANHANDLE COMPLETIONS

Carson County: Cities Service Gas 53-A Burnett, Sec. 26, Blk. 5, H.&G.N. Ry. Sur., elev. 3,299 ft., 18,000,000 cu. ft. gas, pay 2,418-2,595 ft., acid 7,500 gal., T.D. 2,626 ft.

SOUTHWEST TEXAS

Goliad County Wildcat Finds No Shows in Tests of Wilcox

CORPUS CHRISTI, Tex.—Continental Oil Co. and Atlantic Refining Co. got no shows from a series of drill-stem tests at various levels, the last at 8,367-73 ft., in their 1 J. E. Pettus, a Wilcox test 6 miles northeast of Charco, in the S. Vela Survey, Goliad County. The hole is bottomed at 8,892 ft. Following failure of the tests the operators squeezed all perforations and drilled out to 8,205 ft. and perforated at 8,188-99 ft. for further tests. Fain Drilling Co. started this wildcat last October, and it was taken over for further testing by Continental and Atlantic several weeks ago.

Frank Buttram, after reaching total depth of 7,007 ft. in his wildcat test, 1 F. and W. F. Cleveland, 3 miles southeast of Odem, in San Patricio County, has ordered the hole plugged.

Sinclair Prairie has staked location for a test, 2 State, in the submerged land of Nueces Bay, in the East White Point field. It is planned to go to 6,500 ft.

Discovery to Be Dual Completion

In the South Texas area George W. Strake's discovery, 1 Ira G. Yares estate, 4½ miles northwest of the Fitzsimmons field, in Duval County, was standing, waiting for the state Railroad Commission to act on Strake's request for permission to make a dual completion of the well. It is intended to utilize gas from the Government Wells sand to lift oil from a lower sand.

Sun Oil Co.'s wildcat test, 1 D, Laurel, 2 miles west of the North Sun field, in Starr County, was standing following a 24-hour drill-stem test which produced 4 bbl. of distillate. The well died after the test.

Sun has staked location for a wild-

cat, 4-A East, 8½ miles southeast of the Colorado field, in Jim Hogg County. Continental is rigging up for a wildcat, 1 Dee Davenport, 2 miles east of the Rincon field, in the Gregorio Survey, Starr County.

W. Stewart Boyle has run into mechanical trouble at his 1 J. H. Harris, 7 miles south of Waelder, in Gonzales County, and it is reported that he contemplates abandoning the test, skidding over and beginning again. The 1 Harris is Mr. Boyle's second wildcat venture in Gonzales County. His 1 Ottine Oil Co., 4 miles west of Ottine, in the Samuel Robbins Survey, is shut down at 3,800 ft.

Humble Oil & Refining Co. 1 Duren & Richter, in the new Imogene field, Atascosa County, was reported to have found favorable showings and was coring below 7,572 ft. Humble's 1 M. L. Thompson opened the Imogene field last November at total depth of 7,576 ft.

LOWER GULF COAST COMPLETIONS

Fields

Agua Dulce, Nueces County: Jay Simmons 1 J. B. Treybig, Palo Alto grant, 216 bbl. through ⅛-in. choke, perf. 7,083-88 ft., T.P. 1,050 lb., C.P. 1,750 lb., gas-oil ratio 400, T.D. 7,114 ft.

East Placedo, Victoria County: Stanolind 17 Vandenburg & Hill, East Benevides Sur., 46 bbl. through ⅛-in. choke, perf. 6,889-92 ft., T.P. 350 lb., gas-oil ratio 1,061, T.D. 6,893 ft.

Seeligson, Jim Wells County: Magnolia 39 A. A. Seeligson, Los Jaboncillos grant, 120 bbl. through 7/64-in. choke, perf. 5,202-05 ft., T.P. 1,000 lb., C.P. 1,700 lb., gas-oil ratio 933, T.D. 6,090 ft.

SOUTH CENTRAL TEXAS COMPLETIONS

Wildcats

Williamson County: J. E. Schultz 1 S. A. Melasky, P. Coursey Sur., dry at 702 ft.

Fields

Bee Creek, Caldwell County: Ralph R. Ogden 1 O. T. Moore, Jasper Gilbert Sur. A-113, 61 bbl. on pump, T.D. 2,325 ft.

Colorado, Jim Hogg County: Sun 6-B East, Las Moritas grant, 33 bbl. on pump, T.D. 3,040 ft.

Rincon, Starr County: Sun 2-D M. M. Garcia, Sur. 907, 235 bbl. through ⅛-in. choke, perf. 3,928-38 ft., T.P. 1,500 lb., C.P. 700 lb., gas-oil ratio 338, T.D. 4,500 ft.

SOUTH TEXAS COMPLETIONS

Wildcats

McMullen County: Hickok & Reynolds and Humble 1 Shriner ranch, Henry M. Brewer Sur. A-69, dry at 1,795 ft.

Starr County: Sun 2 H. P. Guerra, Las Comitas grant, dry at 4,415 ft.

Otto Woods 1-A Bass, 5 mi. E of Rio Grande, dry at 1,984 ft.

Fields

Driscoll, Duval County: Continental 12-B Clara Driscoll, U. Lott Sur. 484, 57 bbl. through ¼-in. choke, perf. 3,016-22 ft., T.P. 40 lb., C.P. 280 lb., T.D. 3,024 ft.

Frost, Starr County: Sun 1-C Land & Livestock Co., Ygnacio Trevino Por. 97, 13 bbl. through 7/64-in. choke, perf. 5,007-08 ft., T.P. 1,375 lb., C.P. 2,035 lb., gas-oil ratio 15,846, T.D. 5,409 ft.

Rincon, Starr County: Continental and Davis 7-D Slick estate, G.C.S.U.&R.G.N.G. R.R. Sur. 219, 202 bbl. through ⅛-in. choke, T.P. 440 lb., C.P. 960 lb., gas-oil ratio 355, T.D. 4,030 ft.

ILLINOIS FIELD REPORT

Marion County Devonian Test Completed as Dry Hole

MATTOON, Ill.—The Shell Oil Co.'s wildcat Devonian test in Carrigan Township, Marion County, the 1 Sugg heirs, NE NW NE 14-3n-1e, was written off as a dry hole at a total depth of 3,344 ft. last week. This was the first deep test to be drilled in rank wildcat territory in the county in some time.

Prospects of additional drilling in the Centralia are still bright, however, in view of the Devonian prospects in the Patoka pool and the new South Bartelso pool. In the South Bartelso pool, the Texas Co. 1 H. Suhl, SE NE 20-1n-3w, the second test to be drilled in the new producing area, last week drilled into the Devonian and encountered a good show of oil with no water. At last reports the well was being drilled deeper into the pay at 2,542 ft., but no increase in the amount of oil in the hole had been recorded.

The Texas Co.'s 4-C Murphy, NW NE 2-2n-2w, the second Devonian test in the Boulder pool of Clinton County, has been completed as a gas well, gaging 4,250,000 cu. ft. of gas daily. The test, drilled to a total depth of 2,705 ft., encountered the Devonian at 2,542 ft. The discovery well of the Devonian pay in the pool was completed as an oil well flowing at the rate of 500 bbl. of oil and 700 bbl. of water daily.

In the Friendsville area about 5 miles northwest of Mount Carmel, the Magnolia Petroleum Co. 1 Newkirk is making a test of the Levias lime at 2,622-38 ft. after an acid treatment of 1,000 gal. The first gage after acid was 9 bbl. of oil per hour flowing. Located in the NE NW NE 34-1n-13w, the southwest outpost of the pool, this well will probably create immediate drilling activity in the area. The other producing horizons in the area are the Biehl sand, Cypress sand and Benoist sand.

About 1½ miles southeast of the Magnolia well, the Sinclair-Wyoming Co. has set casing on the 1 Amos Majors, NW NW SW 2-1s-13w, to test good saturation encountered in the Cypress sand at 2,317-29 ft. At a total depth of 2,329 ft., the hole is still in saturated sand and from all indications this well should be as good as any of the Cypress wells in the field.

ILLINOIS COMPLETIONS

Wildcats

Clinton County: Rock Hill 1 Pettus, NE NE NE 9-3n-3w, dry at 1,220 ft., Glen Dean 794 ft., Golconda 842 ft., Cypress 969 ft., Paint Creek 1,032 ft., Benoist sand 1,089 ft., Aux Vases sand 1,142 ft.

Jefferson County: Roy Lee 1 Stirewalt, NE NW NE 12-1s-3e, dry at 2,872 ft., McClosky 2,790 ft.

Texas 1 H. B. Smith, SW NE NE 33-3s-3e, dry at 2,857 ft., Glen Dean 2,232 ft., Weiler 2,503 ft., Aux Vases sand 2,736 ft., Ste. Genevieve 2,788 ft., Levias 2,794 ft., McClosky 2,849 ft.

Washington County: Smokey Oil 1 Frederick, SE SW SE 7-1s-5w, dry at 2,741 ft., Ste. Genevieve 985 ft., Devonian 2,032 ft., Trenton 2,698 ft.

Fields

Bible Grove, Clay County: Texas 3 E. T. Bloemker, SE NE NE 4-5n-7e, pumped 65 bbl. in 9 hr., Weiler 2,526-40 ft., T.D. 2,540 ft.

Pure 2 L. Zander, SE NE SE 8-5n-7e, pumped 97 bbl. oil and 6 bbl. water, shot 2,537-43 ft., Weiler 2,533-38 ft., T.D. 2,552 ft.

Texas 1 H. Mascher, NW SW NE 9-5n-7e, dry at 2,885 ft., Glen Dean 2,320 ft., Ste. Genevieve 2,776 ft., McClosky 2,829 ft.

Boulder, Clinton County: Texas 4-C Murphy, NW NE 2-2n-2w, 4,500,000 cu. ft. gas, Devonian 2,542 ft., T.D. 2,705 ft.

Dale, Hamilton County: Pure 5 Mayberry, SE SE SE 7-6s-7e, pumped 25 bbl., Aux Vases 2,985 ft., shot 3,010-30 ft., T.D. 3,030 ft.

Shell 9 Beagle, SE SE SE 6-6s-7e, pumped 17 bbl., shot 2,994-3,014 ft., Aux Vases 2,972-3,008 ft., T.D. 3,014 ft.

Texas 13 M. Davis, SE NW NW 8-6s-7e, pumped 25 bbl., Aux Vases 2,993 ft., shot 3,000-35 ft., T.D. 3,038 ft.

Gulf Refining 1 D. Harrawood, SE NW NE 19-6s-7e, pumped 48 bbl. oil and 58 bbl. water, shot 3,068-75 ft., Aux Vases 3,067 ft., T.D. 3,078 ft.

Dundas, Jasper County: Schuiman Bros. 2 Alonzo King, E½ SW SW 7-5n-10e, dry at 2,950 ft., Aux Vases sand 2,827 ft., McClosky 2,885 ft.

East Dundas, Jasper County: Gulf Refining 3 Bessie Stiff, SE NW NE 23-5n-10e, dry at 3,035 ft., Glen Dean 2,411 ft., Cypress 2,600 ft., Aux Vases 2,873 ft., Ste. Genevieve 2,914 ft., St. Louis 3,029 ft.

East Inman, Gallatin County: Carter 2 J. Crawford, SW SW NE 11-8s-10e, pumped 40 bbl., shot 2,060-65 ft., Tar Springs sand 2,050-63 ft., T.D. 2,065 ft.

East Patoka, Marion County: Magnolia 5 Peddicord, SW NW SE 34-4n-1e, pumped 7 bbl. oil and 10 bbl. water, T.D. 1,374 ft.

Friendsville, Wabash County: Sinclair 1 R. Dixon, NW NW NW 11-1s-13w, swabbed 66 bbl., shot 2,316-19 ft., Cypress sand 2,308 ft., T.D. 2,319 ft.

Iola, Clay County: Texas 2 Hinton-Elkins, SW SE SW 10-5n-5e, dry at 2,374 ft., Aux Vases 2,352 ft.

Luttrell 3 Reed heirs, SW NE NE 15-5n-5e, pumped 135 bbl., shot 2,297-2,307 ft., Benoist 2,290 ft., T.D. 2,321 ft.

Louden, Fayette County: Carter 35-7 Beck-Dial, NW SE SW 35-9n-3e, gas-input well, Benoist 1,614 ft., T.D. 1,656 ft.

Carter 3 M. Scott, SW NE NE 20-8n-3e, pumped 54 bbl., shot 1,514-24 ft., Cypress 1,512 ft., T.D. 1,539 ft.

Carter 3-4 Rhedemeyer, S½ NW NE 3-8n-3e, gas-input well, shot 1,596 ft., Benoist 1,594 ft., T.D. 1,634 ft.

Carter 3-D W. L. Holman, SE SE 3-8n-3e,

(Continued on Page 80)

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KANSAS, NEBRASKA

Arbuckle Production Found North Of Hiss Pool, Barton County

IN the southern part of Barton County, about 2 miles north of the Hiss pool, Palmer Oil Corp. and Mid-Continent Petroleum 1 Harrison, NW NW NE 18-20-13w, was completed for 80 bbl. of oil after three acid treatments. Lansing was topped at 3,232 ft. and the Arbuckle lime at 3,498 ft. Five-inch casing was set at 3,520 ft. and 1,200 ft. of oil rose in the hole in 12 hours.

In Russell County, 3 miles east of the Fairport pool and some 2½ miles south of Dickey Oil Co. 1 Eulert, Auto-Ordnance Corp. completed its 1 Sutton dry at 3,310 ft. The well had 2,200 ft. of fluid in the hole, including 250 ft. of oil. Fair porosity and saturation was found in Lansing lime at 3,006-08 ft., as well as in the Arbuckle at 3,268-73 ft. Cement was drilled at 3,280 ft. and the well showed a little less than 1 bbl. of oil an hour. Perforations at 3,271-75 ft. produced no increase but an acid treatment raised the oil to 1½ bbl. an hour. Additional perforations from 2,802-3,013 ft. put 400 ft. of water in the hole in 1 hour. Last report on the Eulert was that it had good showings of oil in Topeka lime at 2,700 ft. and the Arbuckle at 3,332-35 ft.

KANSAS COMPLETIONS

Wildcats

Edwards County: J. B. Hershey and Ritchie E Hawley, NE SE NE 13-24-17w, dry T.D. 4,685 ft., Lansing 3,845 ft., Mississippi lime 4,306 ft., Misener 4,369 ft., Viola 4,425 ft., Simpson 4,542 ft., Arbuckle 4,661 ft.

Ellis County: Pryor & Lockhart 1-A Kraus, NE SE SW 17-14-19w, pumped 49 bbl., 33.3-gravity, conglomerate sand 3,798-3,805 ft., T.D.

McPherson County: Globe Oil & Ref. 1 Ostlind, SW SW NE 8-19-3w, dry, T.D. 3,790 ft., Mississippi lime 3,135 ft., Viola 3,608 ft., Arbuckle 3,783 ft.

Pratt County: Barbara Oil 1 Ila Allman, SE SE NE 22-26-11w, dry, T.D. 4,485 ft., Lansing 3,617 ft., Mississippi lime 4,065 ft., Viola 4,285 ft., Simpson 4,385 ft., Arbuckle 4,457 ft.

Rice County: Alpine Oil & Royalty 1 Blackhall, NE NE NE 5-21-8w, dry, T.D. 3,485 ft., Lansing 2,885 ft., conglomerate 3,221 ft., Viola 3,345 ft., Simpson 3,396 ft.

Rooks County: Three Way Drlg. 1 Roelff, N½ NE NW 31-7-17w, dry, T.D. 3,485 ft., Lansing 3,066 ft., conglomerate 3,365 ft., Simpson sand 3,422 ft., Arbuckle 3,437 ft.

Rush County: Bird, Hanley & Sheedy 1 Allen, NW SW SW 32-16-16w, dry, T.D. 3,675 ft., Lansing 3,307 ft., conglomerate 3,555 ft., Arbuckle 3,603 ft.

Saline County: Bay Pet. 1 Peterson, NE SW NW 32-16-1w, dry, T.D. 2,738 ft., Mississippian chat 2,672 ft.

Fields

Bemis, Ellis County: Champlin Ref. 3-K Hadley, E½ SW NW 29-11-17w, pumped 120 bbl., Arbuckle 3,461-73 ft., 3,450-56 ft., T.D. 3,482 ft.

Champlin Ref. 1-L Hadley, E½ SE SE 30-11-17w, estimated pumped 600 bbl., Arbuckle 3,612-25 ft., T.D. 3,637 ft.

Chase, Rice County: Derby Oil 3 Link, NE SE 19-19-9w, pumped 62 bbl., Arbuckle 3,229-47 ft.

Harwood Oil 1 Lindquist, S½ SW NW 30-19-9w, dry, T.D. 3,300 ft., Arbuckle 3,298 ft.

Bay Pet. 2 Argo-Smith, NE NW 16-20-9w, pumped 550 bbl., Arbuckls 3,254-65 ft.

Ferrell, Butler County: Table Mesa Oil 9 Ferrell, SW NE SE 21-28-8e, pumped 9 bbl., Mississippi lime 2,620-39 ft.

Greenvale, Russell County: Cities Service 4-B Major, S¼ NE NE 8-15-12w, pumped 91 bbl., Gorham sand 3,247-50 ft.

Hagen, Barton County: Bay Pet. 1-A Scheufler, SE NE SE 19-20-11w, dry, T.D. 3,374 ft., Lansing 3,090 ft.

Iuka, Pratt County: Skelly 1-B Beck, SW NE SE 12-27-13w, pumped 41 bbl., Simpson sand 4,273-80 ft.

Skelly 3-A Beck, SW SE NW 7-27-12w, flowed 150 bbl., Simpson sand 4,221-39 ft.

Lindsborg, SW, McPherson County: Auto-Ordnance 1 Bean, W½ NE NW 36-17-4w, swabbed 17 bbl. an hr., initial 1,915 bbl., Viola 3,397-3,403 ft.

Lost Springs, Marion County: Nelson Drlg. 1 Williams, W½ SE SE 4-17-4e, pumped 429 bbl., Mississippi lime 2,299-2,320 ft.

McLouth, Leavenworth County: Wilson 1 Martz, SW NW 32-9-20e, dry, T.D. 1,473 ft., Mississippi lime 1,461 ft.

McLouth, Jefferson County: Kilness 1 Schrader, NE NE 32-9-20e, dry, T.D. 1,520 ft., Mississippi 1,510 ft.

Merten, Barton County: Helmerich & Payne et al 2 Merten, SW NE 10-19-15w, pumped 133 bbl., Lamotte sand 3,554-60 ft., T.D. 3,565 ft.

Stoltenberg, Ellsworth County: Benson Drlg. 1 Wamhoff, W½ SW SE 26-16-10w, swabbed 209 bbl. in 10 hr., Lansing 3,309-16 ft.

Susank, Barton County: Skelly 1 Deutsch, NW SE NE 16-16-13w, dry, T.D. 3,392 ft., Lansing 3,134 ft., Arbuckle 3,784 ft.

Trapp, Russell County: Great Lakes Carbon 1 Maag, SE NW SE 7-15-13w, pump 852 bbl., Arbuckle 3,264-69 ft.

Skelly 11 Rein, SE NE NW 8-15-13w, pumped 231 bbl., Lansing 2,928-38 ft., T.D. 3,202 ft.

Valley Center, Sedgwick County: Prunty Production 2 A. W. Wright, NE NW SW 12-26-1w, pumped 120 bbl., Misener 3,326-28 ft.

FOREST CITY BASIN

ST. JOSEPH, Mo.—More tanks have been built at the site of the Cities Service Oil Co.'s Bartlesville sand well near Tarkio in Atchison County, 1 Jim Cook in NW NW NW 32-65n-39w. No further reports have come from the well, where a water shutoff had yet to be effected.

Nebraska had no news during the week, except for an explosion on a lease in the Falls City field. Damage estimated at $2,000 occurred on January 26 when three crude-oil tanks blew up and destroyed about 500 bbl. of crude. The tank battery, in which crude was stored from five producing wells on the lease, also was damaged. The fire and blast resulted from ignition of leaking oil as a worker attempted to thaw a riser pipe.

IOWA

Steinberger & Whiteside 1 Guy Fry, a test being drilled in Jefferson County, Iowa, in the southern part of the state, reached 965 ft. and was shut down last week. The Hunton lime was topped at 730 ft. Also shut down was the F. O. Akin 1 Paul in SW SW 15-73n-40w, Mills County, Iowa, in the southwest part of the state. This had passed the 1,400-ft. mark when the contractor was injured in a highway accident.

CANADIAN FIELDS

Northern Areas Kept on Production Through Winter

CHATHAM. — Crude and natural-gasoline production from all Alberta fields for the week ending January 18 averaged 26,920 bbl. daily, compared with 27,685 bbl. daily for the previous week and 27,860 bbl. daily for the corresponding week last year. The daily average included 25,522 bbl. of crude and 1,113 bbl. of natural gasoline from Turner Valley and 285 bbl. of crude from outside fields. The outside production represented a sharp decline from the 486 bbl. daily average of the previous week, due probably to the shutting down of producers in the Vermilion field owing to marketing difficulties There were 229 producing wells in the province, 28 drilling, 1 finished, 2 testing, 12 standing, 1 resuming.

Northern Production

Official figures show that crude production from the Fort Norman field in the Far North in November totaled 1,289 bbl., compared with 1,897 bbl. in October. The field did not produce in November, 1941, this being the first year that production has been continued beyong the navigation season. Heretofore the field has been operated merely to supply local requirements in the North, and a limited production is probably being taken now to furnish fuel for continued drilling operations. A far larger output is anticipated when pipe line or other transportation facilities have been provided, as considerable new production is believed to be shut in.

Production from the separation and refining operations in the tar sand area near McMurray, in northern Alberta, amounted to 481 bbl. The pilot plant of Abasand Oils in this area has a much larger capacity, but here also production is conditioned on local demand and is restricted by lack of marketing and transportation facilities.

(Continued on Page 95)

LOUISIANA GULF COAST

Branch Area Wild Well Brought Under Control

NEW ORLEANS, La.—Union Sulphur Co. 1 J. P. Gueno, in the Branch area of Acadia Parish, which blew out last October and resisted all efforts to bring it under control, has at last been killed, and as the week closed the operator was preparing to test the casing and rework the hole. At the time of the blowout the well caught fire and for weeks it baffled every method resorted to for extinction. Eventually a 160-qt. shot of nitroglycerin put out the flame, but in a half hour the well was afire again. Eventually the blaze was subdued, but efforts to cap the well were futile. A second well, 2 Gueno, was started in November, and this well, now at total depth of 10,217 ft., will be used as a relief well while 1 Gueno is being reworked.

Gages of 1 Gueno were taken at intervals while it was out of control. One of the latest of these showed 344 bbl. of 31-gravity distillate and 38,600,000 cu. ft. of gas. A gage taken in November showed 1,482 bbl. of distillate, 89 bbl. of mud and 72,810,000 cu. ft. of gas.

George H. Echols' discovery, 1 Kessler-Sternfels, in the Napoleonville area of Assumption Parish, which is shut in awaiting construction of storage and separator, is being opened at intervals. It is reported to show an estimated 8½ bbl. of oil an hour through ⅛-in. choke, with tubing pressure of 1,450 lb. and casing pressure sealed. Shut-in tubing pressure was 1,800 lb.

Humble Oil & Refining Co. 1 Louisiana Furs, Inc., wildcat test 8 miles southwest of the Schooner Bayou field, in Vermilion Parish, after being drilled to total depth of 12,057 ft., was plugged back to 11,286 ft. and killed. The crew pulled the tubing, set retainer as a bridge plug at 10,876 ft. and went into the hole with a perforating gun. The gun hung at 9,445 ft., but was recovered, and preparations were made to perforate. On a 1-hour test made shortly before the well was killed it flowed at the rate of 47.1 bbl. of distillate and 2,630,000 cu. ft. of gas per day through 5/32-in. choke, with tubing pressure of 4,080 lb. and gas-oil ratio of 55,800 : 1. Shut-in pressure on tubing was 4,150 lb.

An unconfirmed report was to the effect that two oil sands had been indicated by an electric survey of Union Oil Co. of California 5-G J. G. Gray estate, in the Vinton field of Calcasiu Parish. The 5½-in. casing was set at 6,105 ft. and it was planned to perforate and test.

Union Sulphur has staked location for a wildcat test, 1 Dorris Andrus, in the Branch area of Acadia Parish. The location is in 50-8s-2e. The same company staked location for a Gum Cove area wildcat, 1 W. Barton and Calcasieu National Bank, in 24-11s-12w, Calcasieu Parish. Arkansas Fuel Oil Co. is moving in material for a wildcat, 1 Shadyside Oil Co., Ltd., 2¼ miles east of the town of Bayou Sale, in St. Mary Parish. General Crude Oil Co. was building derrick and preparing to drill a water well in the Bear wildcat area of Beauregard Parish.

LOUISIANA GULF COAST COMPLETIONS

Wildcats

Cameron Parish: Union Sulphur 1 Homer Herbert unit, 18-12s-9w, Big Lake area, dry at 9,744 ft., P.B. 2,500 ft.

Livingston Parish: Danciger Oil & Refining Co. 1 L. E. McGreevy, 1-8s-6e, dry at 7,415 ft.

Fields

Cameron Meadows, Cameron Parish: Magnolia 24 Cameron Meadows Land Co., 21-14s-13w, old T.D. 5,348 ft., P.B. to 4,680 ft. and drilled out to 4,808 ft., est. 8,000,000 cu. ft. gas through ½-in. choke, perf. 4,580-86 ft., T.P. 1,725 lb., C.P. 1,650 lb.

Chaneyville, Rapides Parish: Amerada 14 Weil Co., Inc., 54-1s-2e, old T.D. 5,715 ft., squeezed old perf. and drilled out to 5,687 ft., 31 bbl. on gas lift through 30/64-in. choke, perf. 5,671-86 ft. and 5,686-90 ft.

Amerada 15 Weil Co., Inc., 54-1s-2e, old T.D. 5,699 ft., squeezed old perf. and drilled out to 5,679 ft., 27 bbl. on gas lift through 14/64-in. choke, perf. 5,672-78 ft., input pressure 800 lb.

Delta Farms, Jefferson Parish: Texas 2 State-Bayou Perot, Bayou-17s-23e, old T.D. 9,167 ft., P.B. 8,945 ft., drilled to new T.D. 9,713 ft. for dual completion, perf. 8,925-42 ft., and 9,690-9,705 ft., 123 bbl. through ½-in. choke from perf. 8,925-42 ft. (casing), C.P. 2,000 lb.; 6,800,000 cu. ft. gas through ¼-in. choke at bottom and ⅜-in. choke at top, T.P. 2,000 lb. S.I.

Gueydan, Vermilion Parish: Pure 13 Alliance Trust Co., 33-11s-1w, dry at 9,183 ft.

Sulphur, Calcasieu Parish: Union Sulphur 4 Bernard Ulrich, 19-9s-10w, old T.D. 6,919 ft., drilled out to 6,660 ft., 15 bbl. through ¾-in. choke, perf. 6,636-44 ft., T.P. 100 lb., C.P. 700 lb.

Union Sulphur fee 868, 29-9s-10w, old T.D. 6,239 ft., drilled out to 6,080 ft., 65 bbl. through 9/64-in. choke, perf. 6,013-45 ft., T.P. 740 lb., C.P. 610 lb.

TEXAS GULF COAST

Outpost to Katy Gas Field Preparing to Test Sand

HOUSTON, Tex.—Whether the Katy gas field, in Waller and Harris counties, already one of the biggest gas reserves yet discovered, is to undergo further expansion may hinge on the outcome of a wildcat well, 1 G. T. Pattison, which Stanolind Oil & Gas Co. is drilling in Waller County. Some of the oil men who are interestedly watching the Stanolind project incline to the opinion that if it proves a producer it will open a new pool instead of extending an old one. 3¼ miles to the south.

The 1 Pattison, in the J. M. Bennett Survey, was at 6,538 ft. as the week closed and was preparing to make a drill-stem test in the first Katy gas sand, logged at about 6,520 ft. It topped the Textularia Warreni at 4,550 ft., Marginulina Cocoaensis 5,120 ft., Massilina Pratti 5,270 ft., Textularia Hockleyensis 5,330 ft., Textularia Dibollensis 5,870 ft., Discorbis Hemispherica 6,080 ft., Cockfield 6,290 ft., Discorbis Yeguaensis 6,470 ft. Among conjectures in connection with this wildcat one is that it may reveal that the Katy area is a double structure, with a fault in the middle.

Maco Stewart, on whose land in the James Spillman Survey, Galveston County, a wildcat test was abandoned at 7,780 ft. recently when it ran into heaving shale, is reported to be asking permission to complete the well, which was to have been a deep test into the Frio. Mr. Stewart's plan, it is understood, is to complete in the Miocene, at about 5,130 ft. The original hole was drilled by Glenn H. McCarthy, who is said to have held the rights below 7,500 ft.

Continental Oil Co., which has opened gas production with its 1 O. F. Allenson, 8 miles north of Louise, in Wharton County, ran a gage, which showed 2,250,000 cu. ft. of gas through ¼-in. choke, with perforations at 4,163-66 ft. Tubing pressure was 1,680 lb. and casing pressure was the same. The well is bottomed at 5,523 ft. Continental has staked location for a test 9 miles northeast of Louise, in Wharton County. It is the 1 E. O. Swanson.

Cities Service Oil Co. made a 4-hour test of 1 F. Stephens, a mile east of Ramsey, in Colorado County, and the well flowed 2.26 bbl. of 47.5-gravity distillate and 359 bbl. of salt water through 7/16-in. choke. Tubing pressure was 320 lb. and casing pressure 650 lb. Gas volume was estimated as 904,000 cu. ft. per day. Preparations were being made to squeeze perforations at 10,501-04 ft. The 5½-in. casing was set at 10,504 ft.

TEXAS GULF COAST COMPLETIONS

Fields

Big Creek, Fort Bend County: Angle &

Angle 1 A. P. George, B. Wickson Sur. A-95, dry at 7,020 ft.

Danbury, Brazoria County: Humble 3-B Bassett-Blakely, H.T.&B. Sur., 162 bbl. through ⅛-in. choke, perf. 5,505-30 ft., T.P. 1,050 lb., C.P. 1,100 lb., gas-oil ratio 358, T.D. 5,999 ft.

Stewart, Jackson County: W. S. Boyle et al 2 William Pagel, Geo. Sutherland Sur., 50 bbl. through 7/64-in. choke, perf. 4,991-95 ft., T.P. 1,400 lb., C.P. 800 lb., gas-oil ratio 4,950, T.D. 5,040 ft.

Wildcats

Jackson County: Lon Glasscock 1 J. M. Heard, Morris & Cummins Sur A-230, 33 bbl. through 7/16-in. choke, perf. 5,128-31 ft., T.P. 1,350 lb., C.P. 1,800 lb., gas-oil ratio 5,539, T.D. 5,648 ft., new sand discovery.

OKLAHOMA

McComb Discovery Completed As Good Hunton Producer

FIFTEEN wildcat tests completed indicated a comparatively active week. Kerlyn and Continental 1 Weaver, NW NE NE 32-8n-3e, southeast of McComb in Pottawatomie County, was completed for 616 bbl. of 35.5-gravity oil through ¾-in. choke. Pay zone is the Hunton lime at 4,664-80 ft. The well was drilled to 5,451 ft. and plugged back to 4,760 ft.

A mile northwest of McComb, Mid-Continent 1 Fromuth, SE SE 21-8n-3e, which had showed for a producer in the Misener sand at 4,563 ft. and Viola lime at 4,958 ft., was completed dry at 4,995 ft. A drill-stem test at 4,560-85 ft. recovered 220 ft. of oily mud and 480 ft. of oil in 55 minutes. Seven-inch casing was set at 4,988 ft. and perforations at 4,560-85 ft. put 700 ft. of oil in the hole. Ten barrels of oil was swabbed overnight. After acid treatment the well swabbed 65 bbl. of oil and 14 bbl. of water.

On the south tip of the Byars pool in McClain County, Ed Kubat et al 1 Prater, SW SE 21-5n-3e, made three good flowing tests, the last of which was 200 bbl. in 24 hours, and was completed in Viola lime at 3,468-87 ft. The well flowed through 1/32-in. choke on tubing set at 3,481 ft. Tubing pressure was 240 lb.

Another 40 acres was added to the proven area at Northeast Edmond in Oklahoma County. Harper-Turner 13 Harper flowed 45 bbl. of 46-gravity oil from Bartlesville sand at 5,873-5,905 ft. It extends the field one location north.

Stanolind Oil & Gas Co. 1-A Bleeker, Wilcox discovery in NW SE SW 28-10n-2e, flowed 517 bbl. of oil in 15 hours before being shut in for connections. Five-inch casing was set at 5,874 ft., the plug drilled and clear water was circulated through the tubing before being swabbed down to make the flow test.

OKLAHOMA COMPLETIONS

Wildcats

Creek County: Seismograph Service 1 Belford, NW SW SE 26-15n-10e, dry, T.D. 3,048 ft., Misener 2,993 ft., Viola 3,052 ft., Wilcox 3,090 ft.

Garfield County, N of Waukomis: Champlin Ref. 1 Krejci, S½ SW NE 27-21n-6w, dry, T.D. 7,533 ft., Tonkawa 4,485 ft., Layton 5,128 ft., Viola 6,990 ft., Wilcox 7,135 ft., second Wilcox 7,205 ft.

Jefferson County: Allied Materials 1 Hefner-Jones, SW SW NE 21-3s-4w, dry, T.D. 2,550 ft., sand 1,613 ft., 2,185 ft., lime 2,409 ft.

Kay County: Norbla Drlg. and Mid-Continent 1 Bergent, SE SE SE 25-27n-4e, dry, T.D. 3,138 ft., Big lime 2,735 ft., Oswego 2,856 ft., Skinner 2,995 ft.

Kiowa County: E. M. Thomassen 3 Baker, NE NW NW 7-6n-18w, dry, T.D. 1,199 ft., gas reported at 1,145 ft., est. 1,000,000 cu. ft.

Logan County: Keener Oil & Gas 1 Anderson, NE SW NE 28-15n-1e, dry, T.D. 5,567 ft., Oswego 4,641 ft., Prue 4,749 ft., Hunton 5,075 ft., Viola 5,278 ft., Wilcox 5,452 ft., second Wilcox 5,528 ft.

McClain County: Ed Kubat et al 1 Prater, SW SE 21-5n-3e, flowed 200 bbl., Viola 3,468-87 ft.

Osage County: Cities Service No. 486, NW NE SE 31-24n-8e, dry, T.D. 2,590 ft., Big lime 2,010 ft., Oswego 2,180 ft., Mayes 2,577 ft.

Finance Oil No. 54, NE NW 31-23n-11e, dry, T.D. 2,209 ft., Oswego 1,371 ft., Bartlesville 1,710 ft., show oil, Mayes 1,875 ft.

Payne County: Starr and Kubat 1 Hesser, NW NW SE 27-20n-3e, dry, T.D. 4,528 ft., Bartlesville 3,905 ft., Misener 4,350 ft., Viola 4,376 ft., Wilcox 4,448 ft., second Wilcox 4,495 ft.

Lewis Prod. 1 Funk, SE SE SW 8-18n-1w, dry, T.D. 5,684 ft., Oswego 4,675 ft., Mayes 5,155 ft., Hunton 5,380 ft., Viola 5,449 ft., show oil, Wilcox 5,542 ft., second Wilcox 5,678 ft.

Pottawatomie County: Mid-Continent 1 Fromuth, SE SE 21-8n-3e, dry, T.D. 4,995 ft., Misener 4,563 ft., Viola 4,958 ft., perf. 4,560-85 ft., acidized and swabbed 65 bbl. oil and 14 bl. watber.

Kerlyn and Continental 1 Weaver, NW NE NE 32-8n-3e, flowed 616 bbl. through ¾-in. choke, 35.5 gravity, Hunton 4,664-80 ft., T.D. 5,451 ft., P.B. 4,760 ft., perf. 4,664 ft.

Stephens County: Carl Carter 1 Gentry, SE SE NE 24-1n-6w, dry, T.D. 450 ft.

J. J. Beard 1 Walton, SW SE SW 10-2s-8w, dry, T.D. 2,804 ft., broken sand 2,549-2,745 ft.

Fields

Northeast Edmond, Oklahoma County: Harper-Turner 13 Harper, NE NW 17-14n-2w, flowed 45 bbl., Bartlesville 5,873-5,905 ft., 46 gravity.

Osage City, Osage County: Moore Oil 1 Sanford, NE SE NE 34-22n-8e, pumped 30 bbl., Big lime 1,844-60 ft., T.D. 2,366 ft.

Tonkawa, Kay County: Ingling & Parker 4 State, NE NW SE 36-25n-1w, dry, T.D. 2,091 ft., sand 2,017 ft.

Tussy, Carter County: Allied Materials 1 Costello, NE SE NW 9-1s-3w, flowed 20 bbl., sand 2,713-73 ft., T.D. 2,905 ft.

Velma, Stephens County: Carl Carter 1 Pogue, NE NE NE 32-1s-5w, dry, T.D. 798 ft.

Wewoka Townsite, Seminole County: Manahan Oil 1 Youngblood, SE NE SW 8-8n-8e, dry, T.D. 4,300 ft., Cromwell 3,405 ft.

Miscellaneous

Creek County: L. B. Jackson 1 Turner, S½ NW NE 29-17n-11e, pumped 8 bbl., Bartlesville 2,007-56 ft.

Barnsdall No. 20, SW NE SW 17-23n-12e, pumped 4 bbl., Bartlesville 1,490-1,590 ft.

Gulf 1 E. and T. Berryhille, W½ SW 9-17n-12e, input well, T.D. 1,639 ft.

Gulf No. 2, W½ E½ SW 9-17n-12e, input well, T.D. 1,597 ft.

Gulf 29 E. Berryhill, pumped 2½ bbl., Glen sand 1,398-1,565 ft.

Sinclair Prairie 46 Berryhill, E½ SW NE 16-17n-12e, pumped 10 bbl., sand 1,396-1,563 ft.

Sinclair Prairie 48 L. L. Berryhill, NE SW SE 16-17n-12e, pumped 5 bbl., sand 1,418-1,582 ft.

Hughes County: Otha Grimes 1 Stevenson, SE NW NW 19-8n-11e, 7,000,000 cu. ft. gas, Gilcrease 2,808-30 ft.

Okfuskee County: W. B. Pine 1 McFadden, NW SE 22-10n-11e, dry, T.D. 2,982 ft., Cromwell 2,880 ft.

Illinois Fields

(Continued from Page 74)

pumped 104 bbl., acidized, Devonian 3,015 ft., pay 3,105-07 ft., T.D. 3,105 ft.

Carter 3-D Musser, SE SW 2-8n-3e, pumped 180 bbl., acidized, Devonian 3,036 ft., pay 3,119-21 ft., T.D. 3,121 ft.

Carter 6-D C. McCullum, NE SW 2-8n-3e, flowed 100 bbl., Devonian pay 3,115-16 ft., acidized, T.D. 3,116 ft.

Markham City, Jefferson County: Ohio and Gulf 1 Lingle, N½ NE SW 36-2s-4e, pumped 524 bbl., acidized, McClosky 3,047-69 ft.

Kiowa Drlg. 1 Marker, S½ SW NE 36-2s-4e, pumped 245 bbl., acidized, McClosky 3,044-56 ft., T.D. 3,061 ft.

Mt. Erie, Wayne County: Rockhill-Pure 1-A B. Thomas, NE NW SW 11-1s-8e, dry at 3,257 ft., Glen Dean 2,565 ft., Weiler 2,767 ft., Aux Vases sand 3,027 ft., Ste. Genevieve 3,095 ft., Levias 3,110 ft.

New Harmony, White County: Bay Pet. 3 Evans, SW NE SW 4-4s-14w, pumped 47 bbl., shot 2,800-20 ft., Aux Vases sand 2,795-2,807 ft., T.D. 2,820 ft.

Rural Hill, Hamilton County: Nash Redwine 1 Mezo, E½ SW SE 24-6s-5e, dry at 3,287 ft., Cypress 2,757 ft., Aux Vases 3,103 ft., Levias 3,186 ft., McClosky 3,260 ft.

South Bible Grove, Clay County: Kingwood 1 H. Lewis, NW NW NW 16-5n-7e, pumped 66 bbl. oil and 33 bbl. water, shot, Weiler 2,527-37 ft., Cypress sand 2,490-2,502 ft., T.D. 2,537 ft.

South Lawrence, Lawrence County: Brinkerhoff Drlg. 1-B S. R. Putnam, SE SE NE 23-2n-12w, dry at 1,415 ft., Biehl 1,410 ft.

S. W. Mitchell 1-C Bruner, NW NW SE 26-2n-12w, dry at 1,418 ft., Biehl 1,393 ft.

South Sailor Springs, Clay County: W. C. McBride 1 E. Hancock, NW NE NE 10-3n-7e, pumped 91 bbl., perf. 2,430-38 ft. in Hardinsburg sand, T.D. 2,620 ft.

Stokes, White County: Pure-Carter 2-A Austin, SE SW NW 17-6s-9e, pumped 68 bbl., Paint Creek sand 2,791-2,810 ft., T.D. 2,810 ft.

Walpole, Hamilton County: Texas 2 M. A. Smith, SE NW NW 35-6s-6e, dry at 3,145 ft., Weiler 2,745 ft., Benoist 2,950 ft., Ste. Genevieve 3,128 ft.

Texas 1 Pennington, NW SE NW 35-6s-6e, dry at 3,123 ft., Aux Vases 3,104 ft.

Miscellaneous, Clinton County: H. A. Hoffman 3 Wilson, SW NE NE 24-2n-3w, 2,000,000 cu. ft. gas, Benoist sand 1,106 ft., T.D. 1,123 ft., P.B. 1,121 ft.

OHIO, INDIANA, KENTUCKY

Clinton Sand Gas Pay Extended in Pittsburg Pool

ZANESVILLE, Ohio.—A large gas well gaging 8,240,000 cu. ft. in the Clinton sand extended the Pittsfield pool ½ mile to the south. The well was completed by the Ohio Fuel on the Hannah Stoddard tract in Lot 159, Pittsfield Township, Lorain County. The Pittsfield pool is 5 miles north of the newly opened Wellington pool. The Wiser Oil drilled in a 3,000,000-cu. ft. well on an inside location in the Hinckley pool on the Jennie Foy tract. The Ohio Oil is spudding a deep wildcat on the P. C. Fitzerald tract in Center Township, Guernsey County.

OHIO COMPLETIONS

Athens County, York Township: Hocking Valley Drlg. 13 New York Coal Co., Sec. 35, Clinton, dry, T.D. 3,371 ft.

Guernsey County, Wheeling Township: Ohio Fuel 1 H. W. Peiter, Sec. 15, Oriskany, 73,336 cu. ft., T.D. 3,223 ft.

Knox County, Jefferson Township: Penick et al 1 Elmer Shultz, Lot 14, Clinton, dry, T.D. 2,921 ft.

Lorain County, Pittsfield Township: Ohio Fuel 2 Hannah Stoddard, Lot 159, Clinton, 8,240,000 cu. ft., T.D. 2,245 ft.

Medina County, Hinckley Township: Wiser Oil 1 Jennie Foy, Lot 28, Clinton, 3,000,000 cu. ft., T.D. 2,475 ft.

Ohio Fuel 1 Ray Eastwood, Lot 29, Clinton, 579,000 cu. ft., T.D. 3,609 ft.

Meigs County, Salem Township: Downie et al 1 Clarence Barnes, Ses. 7, 2d C. R., 116,000 cu. ft., T.D. 692 ft.

Monroe County, Franklin Township: Cunningham et al 4 S. A. Danford, Sec. 17, Squaw, dry, T.D. 1,460 ft.

Morgan County, York Township: Industrial Gas 1 C. C. Pletcher, Sec. 35, Berea, 120,000 cu. ft., T.D. 1,155 ft.

Noble County, Marion Township: Ohio Fuel 1 W. A. Staats, Sec. 23, Berea, Dry, T.D. 1,757 ft.

Perry County, Harrison Township: Swingle et al 4 Chas. M. King, Sec. 9, Berea, 100,000 cu. ft., T.D. 933 ft.

Monroe Township: C. Z. Ruth 11 Corning Mining Co., Sec. 22, Berea, 5 bbl., T.D. 1,107 ft.

Reading Township: Preston Oil 3 Willis Madden, Sec. 12, Clinton, 55 bbl., T.D. 3,210 ft.

Pure Oil 1 Albert Wilson, Sec. 12, Clinton, 78 bbl., T.D. 3,218 ft.

Thorn Township: Palm Oil 3 Herman Long, Sec. 14, Clinton, 10 bbl., T.D. 2,771 ft.

Preston Oil 1 M. O. Henderson, Sec. 27, Clinton, dry, T.D. 2,770 ft.

Tuscarawas County, Lawrence Township: Nat. Gas. W. Va. 1 Sam'l McDonald, Lot 66, Clinton, 200,000 cu. ft., T.D. 4,812 ft.

Sandy Township: Nat. Gas W. Va. 1 Frank Evans, Sec. 7, Clinton, dry, T.D. 4,811 ft.

Washington County, Grandview Township: Henning Bros. 2 Forest Rinard, Sec. 34, Squaw, 187,000 and 2 bbl., T.D. 1,851 ft.

Wesley Township: Orndoff et al 5 H. L. Rudolph, Sec. 6, Mxbg. 800 ft., 125,000 cu. ft., T.D. 990 ft.

INDIANA COMPLETIONS

Gibson County: Superior 1 M. E. Lott, SE NW NE 30-3s-12w, dry at 2,790 ft., Waltersburg 1,951 ft., Cypress sand 2,388, Benoist sand 2,519 ft., Aux Vases 2,638 ft., Ste. Genevieve 2,685 ft., McClosky 2,759 ft.

Harrison County: Harrison Dev. 1 C. Smith, NW SE 32-3s-4e, 60,000 cu. ft. gas, Carper sand 656 ft., T.D. 710 ft.

Harrison Dev. 1 W. Snider, E½ SW SW NE 33-2s-4e, dry at 988 ft., New Albany 607 ft., Devonian 709 ft

WESTERN KENTUCKY

OWENSBORO, Ky.—In Henderson County, about 3 miles south of the Smith Mills pool and 5 miles east of Uniontown, Ashland Refining Co. et al 1 Ed Willett was showing for a new producer in McClosky lime at 2,576-81 ft. A drill-stem test at this depth, open 1 hour, recovered 1,735 ft. of oil and some drilling mud. All upper zones were reported dry. Located 3 miles from nearest production, the well will open a large area for further drilling.

Two offsets are under way at the new pool opened by Carter Oil Co. at its 1 Denton in NE NW SW 21-0-23. The 2 S. T. Denton in 22-0-23, is 1,320 ft. north of the discovery, where surface casing has been set, and the 1 Jennie Denton in 21-0-23, 780 ft. to the southwest also has operations started. The latest report on the Carter discovery was that it was cleaning out after a 20-qt. shot in the Benoist pay at 2,356-64 ft. Nine barrels of oil was swabbed in 3 hours.

EASTERN KENTUCKY

ASHLAND, Ky.—Magoffin County entered the eastern Kentucky limelight last week with three oil-well completions bringing a combined total of 22 bbl. per day. The report also shows other activities in the Magoffin field.

For the second successive week no gas wells were completed in the area although three wells are near the completion level. This is the first time in over 2 years that a report of this type has been made.

Cumberland Petroleum has replaced a small compressor on the Mary Burke and Yearns Hale farms with a larger compressor. The same firm is down 1,800 ft. in well No. 54 on the L. C. Bailey land in the Magoffin County oil fields. This is fairly close to a deep test well drilled without pay results over a year ago. However, it is believed this well will only go to the 2,300-ft. level.

EASTERN KENTUCKY COMPLETIONS

Magoffin County, Oil Springs district: A. V. Hoenig 33 W. H. Conley, pumped 6 bbl., T.D. 1,200 ft.

A. V. Hoenig 36 Green Rice, pumped 10 bbl., T.D. 1,206 ft.

Bed Rock Pet. 15 Patton Borders, pumped 6 bbl., T.D. 1,301 ft.

NORTH LOUISIANA, ARKANSAS

Nick Springs Wildcat To Test Cotton Valley Zone

SHREVEPORT, La.—In the Nick Springs field of Union County, Fohs Oil Co. 1 Grace was reported to have squeezed perforations in the Cotton Valley zone around 5,600 ft. A showing of oil was found at this level as the well was being drilled to the Smackover lime. The well is the second Smackover test in the field but the first to try the Cotton Valley formation.

Carter Oil Co.'s Union County wildcat, southeast of El Dorado, was reported dry after running electric log at total depth of 7,919 ft. The well will be abandoned unless further testing is done in the Cotton Valley zone where some showings of oil were found.

ARKANSAS COMPLETIONS

Macedonia, Columbia County: McAlester Fuel Co. 1-A Whitehead, C S½ SE 18-18s-21w, flowed 40 bbl. condensate, pay 8,043-85 ft., T.D. 8,978 ft.

NORTH LOUISIANA COMPLETIONS

Hosston, Caddo Parish: W. T. Bell 2 Thigpen-Herold, N½ SE SW 34-22n-16w, flowed 40 bbl., pay 2,455-62 ft., T.D. 2,467 ft.

Lisbon, Claiborne Parish: Big West Drlg. 1 J. Rudasill, aprox. C NE 34-21n-5w, dry, T.D. 9,905 ft.

Pine Island, Caddo Parish: Magnolia 45 Doan-Thigpen, NE SE SE 10-17n-42, flowed 40 bbl., chalk 1,531 ft., T.D.

Simsboro, Lincoln Parish: Arkansas Louisiana Gas 1 Monsted-Fowler, NE SE SW 10-17n-4w, 26,500,000 cu. ft. gas, Travis Peak 6,371 ft., T.D. 6,594 ft.

Triangle Drlg. 5-C Kerr, E½ SE NW 24-17n-12w, pumped 50 bbl., pay 3,154-58 ft., T.D. 3,175 ft.

Among the Drilling Contractors

John E. Bish Well Servicing Co., Houston, Tex., has contracts for two workover jobs. One is on Shell Oil Co., Inc., 16 Heyd, in the Iowa field, Louisiana. The other is on D. D. Feldman 1 Manou, in the Jennings field, Evangeline Parish, Louisiana.

C. I. Drilling Corp., Houston, Tex., after drilling to about 10,700 ft. on a wildcat test for William Helis, the 1 Armelise Planting Co., in the Napoleonville area of Assumption Parish, Louisiana, plugged back to 4,000 ft., and is sidetracking in the hope of hitting the sand higher on the dome.

Parker Drilling Co., Houston, Tex., is working on two contracts. It has spudded 1 Shadyside for Arkansas Fuel Oil Co., near Franklin, in St. Mary Parish, Louisiana. This is a wildcat test, to go to 12,000 ft. Parker is moving in at 1 R. G., for Atlantic Refining Co., Beauregard Parish, an extension of the Neale field, projected depth 11,600 ft.

B. & C. Well Servicing Co., Houston, Tex., has the contract for a workover job on Humble Oil & Refining Co. A-1 Lawrence, in the South Cotton Lake area of Chambers County, Texas.

Cron & Gracey Drilling Corp., Houston, Tex., has the contract for workover operations on Gulf Refining Co. 1 Delta Securities Co., in the Bayou Couba field, St. Charles Parish, Louisiana. This was the discovery well of the field completed last September, and its original total depth was 6,917 ft., plugged back to 6,543 ft. It began making salt water and then went dead.

Falcon-Seaboard Drilling Co., Houston, Tex., will drill 12 Realty Operators, in the Gibson field, Terrebonne Parish, Louisiana, for Shell Oil Co., Inc. It has the contract for Vincent & Welsh 1 D. J. Miller, in the East Tepetate field, Acadia Parish. In the same parish the company has set surface pipe for Sun Oil Co. 1 Daily, near Egan. Falcon-Seaboard has the contract for deepening Gulf Refining Co. 1 Frank W. Miller, a wildcat 3 miles south of the Homer field, in Claiborne Parish. The original depth was 9,500 ft.

Petroleum Well Service Co., Houston, Tex., has contracted to drill James A. Gray 1 Foster, a semiwildcat, about 5 miles southwest of Fostoria, in Montgomery County, Texas. The well, an Atlantic Refining Co. farmout, will go to 6,000 ft. It is about ¼ mile west of production.

Gilger Drilling Co., Houston, Tex., is at work on Grubb & Hawkins 4 Cass County fee School Lands, in the Kildare area of Cass County, Texas. Projected depth is 6,000 ft.

Tolbert Drilling Co., Breckenridge, Tex., has announced plans to drill a 4,600-ft. test to the Ellenburger in Young County, Texas, on a block acquired from Continental Oil Co. The test will be known as 1 M. K. Graham, 467 ft. from south and west lines, Section 2398, T.E.&L. Survey.

L. D. Stripling has the contract to drill the C. G. Hamil 1 C. G. Hamil, new wildcat 6 miles southwest of Boerne, Kendall County, Texas. Operator was moving in equipment. The test is located on a 3,000-acre lease and is measured 764 ft. south and 34° west from the northwest corner of the F. Herff Survey.

Rowan Drilling Co., Fort Worth, Tex., finished drilling the first of two tests for Shell Oil Co., Inc., in the new Quitman pool of Wood County, East Texas, taking the well through the section of the Paluxy sand into water to establish a water table. Total depth is 6,432 ft. The second Shell well in the area being drilled by Rowan has reached 5,200 ft.

Petroleum Drilling Co., Midland, Tex., headed by Milton Unger, has announced plans to drill two outpost wells on Shell Oil Co., Inc., farmouts in the Taylor Link pool of Pecos County, West Texas.

Eastland Oil Co., Fort Worth, Tex., is deepening with cable tools an old producer in the Estes pool of Ward County from the 2,700-ft. pay to the 2,900-ft. zone.

Ashby Drilling Co. has the contract to drill Gulf Refining Corp. 1-A Bunning, C S½ NE NW 35-22n-6w, Missaukee County, Michigan.

A. H. and C. L. Rowan, comprising the **Rowan Drilling Co.** of Fort Worth, Tex., contractors on the two tests of Shell Oil Co., Inc., offsetting the Quitman strike in Wood County, Texas, were assigned 848.8 acres by Andrew V. Erwin et al. The acreage was divided 592 acres in the Polly Tier Survey and 218.6 acres in the E. Rehorse Survey and 38 acres in the D. C. Elledge Survey.

Eugene Hilliard has been awarded contract to drill Robert Bond and Eugene Hilliard 1 Walter Thompson, C E½ NE NW 3-19n-8w, Osceola County, Michigan.

Falcon-Seaboard Drilling Co. is entering Oklahoma after making deal with Guido Piggott for a wildcat in C NW SE 10-10n-1e, on south end of the Newalla anticline in northeastern Cleveland County. Companies reported supporting the deal for a Wilcox sand test include Mid-Continent, Deep Rock, Sinclair Prairie and Barnsdall.

Rowan Drilling Co. spotted 20 Jameson estate at Danbury, Brazoria County, Texas, projected to 6,000 ft. It is on a 1,296-acre lease in the Henry Austin Survey 6. The same operators are completing 19 Jameson through perforations at 3,550-75 ft.

Jack W. Frazier was drilling below 6,410 ft. in sidetracked hole in 1 Sweet Lake Land & Oil wildcat, North Crowley area, Cameron Parish, Louisiana. This wildcat was drilled to 8,756 ft., where it blew out and made gas, sticking the drill pipe. It was plugged back to around 5,000 ft. and sidetracked to core again. It is in 12-12s-7w, a Stanolind farmout.

Parker Drilling Co. of Tulsa was rigging up at W. P. Faulkner, St. Louis, et al's 1 A. P. Rothgarn, staked in C E½ SW SE 10-21s-13w, Stafford County, Kansas. Atlantic Refining Co. has taken a half interest in the deal. The test is situated 1¾ miles southeast of the Shaeffer pool and 2 miles northeast of the Hazel pool, both discovered by Faulkner.

George P. Livermore, Inc., is contractor on the Standard Oil Co. of Texas 1 Douglas Oil Co., Section 9, Block 194, G.C.&S.F. Survey, 7,000-ft. Ordovician wildcat in the Yates district of Pecos County, Texas. Test was scheduled to spud in this week.

Ashby Drilling Co. has the contract to drill Continental Oil Co. 1 James McMahon, in C NW SE 10-3s-4w, Calhoun County, Michigan.

Phillips Invests $3,000,000 In More West Texas Producing Properties

FORT WORTH, Tex.—Investment of Phillips Petroleum Co. in West Texas producing properties was increased last week by nearly $3,000,000 when the company acquired all capital stock of Broderick & Calvert, Inc., from Mrs. Elizabeth Broderick and George Calvert. Negotiations are substantially completed whereby Sunray Oil Co., Tulsa, will take 25 per cent of the Broderick & Calvert stock.

All of the producing properties of Broderick & Calvert, comprising 2,840 acres and 101 producing wells, are located in the Foster, Harper, North Cowden and South Cowden pools of Ector County, West Texas. In addition there are 4,200 acres of non-producing leases all located in West Texas except a block near production south of Groesbeck in Limestone County.

This is the third important acquisition of producing properties in the West Texas district made by Phillips Petroleum in the last 30 days. Previously, Phillips bid in the oil properties of the W. H. Dunning, Jr., estate for $1,265,000, thereby securing an interest in about 1,200 acres of producing properties and also obtaining 3,460 acres of undeveloped leases in Gaines County in addition to several thousand acres of undeveloped leases in Reagan, Sterling, Crockett, and Terry counties, Texas. Also, late in December 1942, Phillips and Sunray acquired the stock of Alma Oil Co. which included four properties in West Texas in addition to holdings in Oklahoma.

The Broderick & Calvert properties were built up over a period of years by George Calvert, at one time a New York newspaper man who came to the Southwest at the time of the Mexia boom and Al Broderick who died several months ago.

Labor Shortage Makes Deep Wildcats a Question Mark

Word comes from Amarillo, Tex., that the labor situation is having a direct effect on the drilling of wildcats in that area. Drilling contractors allege that the cost has risen 35 per cent in drilling a wildcat merely on the time lost by inexperienced labor that must be used. War industries, and the prospect they hold for steady employment have lured many of the skilled workers and the draft has taken others. This leaves men who have had little experience in oil-well drilling. One operator is said to have made the statement that a deep test today would cost him $7,000 more than it would have a year ago and he doubted whether or not the drilling contractor would break even then.

J. W. Harris Drilling Co. Wichita Falls, Tex., have been awarded contract to drill a 4,800-ft. rotary test for Anderson-Prichard Oil Corp. and Darby Petroleum Corp. in southern Young County, Texas, in the J. Mooney Survey on the Henry T. Mooney land.

Dean Furse, drilling contractor of Arlington, Tex., is now drilling on a 6,000-ft. test 7 miles east of Douglas, in Coffee County, Georgia. R. J. Taylor et al of Philadelphia, are the owners of the test. A drilling contract has been signed and the cash placed in the bank to cover a 6,000-ft. test in Early County, Georgia, bordering on the Alabama line. The test is being financed principally by citizens of Waycross, Ga. Heavy leasing has been reported in Brantley and Charlton counties.

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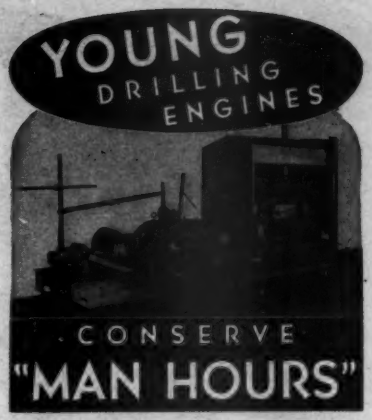

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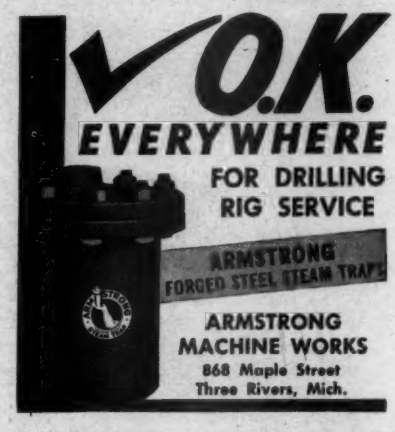

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DRESSER PIPE COUPLINGS AND REPAIR DEVICES

PERSONALS

Herbert R. Gallagher, former president of Consolidated Oil Corp., and previously, from 1911 to 1932, senior vice president of the Shell Oil Co., Inc., of California, has accepted appointment as director in charge of District 5 for the Petroleum Administration for War. He retired as president of Consolidated Oil Corp., in 1940 after serving in that capacity 8 years. He was chairman of Region 1 committee under the NRA and was a member of the Petroleum War Service Board during the first World War.

Elmer W. Ellsworth, geologist, who has been executive secretary of the Independent Oil Producers Association of Illinois, has resigned to enter the armed services and has been succeeded by **Donald L. Blaff,** as managing director.

George Vorbe has closed his consulting practice in Midland, Tex., and has accepted an associate professorship on the faculty of New Mexico School of Mines, Socorro, N. M., in geology and petroleum engineering. From 1927 to 1931 he was with Texas Pacific Coal & Oil Co. as district geologist. For 2 years he was with Stanolind Oil & Gas Co., before beginning his consulting practice.

C. S. Noland, West Texas scout for Skelly Oil Co. for the past 5 years, has been transferred to the geological department and will be the company's production geologist for the West Texas-Southeast New Mexico district.

W. S. Duty, Winchester, Ky., president of Sterling Oil & Gas Co., spent several days last week in Oklahoma inspecting the company's producing properties and visiting **T. T. Curtis,** vice president in charge of production, at the Tulsa office.

Darsie A. Green has been elected president of the Illinois Geological Society, with **J. R. McGehee** vice president and **Fred H. Moore** secretary-treasurer.

George L. MacPherson, assistant since 1935, has become chief engineer for Imperial Oil, Ltd., succeeding **Thomas Montgomery,** who retired recently after serving the company for 46 years. Mr. Montgomery began his refining career with the Bushnell plant, a Standard Oil Co. subsidiary, at Petrolia, Ont., which later became the Imperial Oil Co. and was subsequently moved to Sarnia. He had charge of expanding the Sarnia plant to its present standing as the largest in the British Empire and also supervised numerous foreign installations.

A. W. Wyatt, geological scout for the Atlantic Refining Co., Midland, Tex., has been elected president of the West Texas Oil Scouts Association for the thirteenth consecutive year. **Carroll Mitchell,** scout for Continental Oil Co., was elected vice president and head of the land and geophysical check meetings.

Russell A. Woodall, assistant district engineer in the Shreveport, La., area for United Gas Pipe Line Co., has been made district engineer. He joined United as a draftsman in 1937, became a member of the engineering staff in 1939, and was promoted to assistant district engineer in 1940. **J. P. Jackson,** formerly Shreveport district engineer, has been transferred to the general office engineering department.

First Lt. Charles P. McKnight, who was chief field engineer for Houston Oil Co., Houston, Tex., has completed the engineer officers' training course and has been assigned to the 392d Engineer Regiment at Camp Claiborne, Louisiana. Lieutenant McKnight took the foreign-type examination when he entered war service last November, and he expects eventually to be sent overseas. After receiving his engineering education at the University of Texas and beginning his professional career he graduated from the South Texas School of Law, became a member of the Texas State Bar Association and served as counsel in suits involving titles and boundary lines. He is one of the relatively few licensed land surveyors in his state. He is a member of the Houston Engineers Club and served as state director of the Texas Society for Professional Engineers.

E. P. TALLANT

Engineering Career Took Precedence Over Baseball

E. P. TALLANT, known to his friends as Perce, has been appointed chief production engineer of Union Oil Co., succeeding Howard C. Pyle who has become a member of the U. S. Army Engineering Corps.

Mr. Tallant graduated from Stanford University at Palo Alto, Calif., in 1909, with a degree in engineering. After leaving the university, he played professional baseball for a year and then became associated with the Southern California Edison Co. A year later, he became associated with a group of large contractors and entered the employ of Union Oil Co. in March 1917. He was transferred to the engineering department and placed in charge of sales construction of the entire company in the sales and transportation departments. Later Mr. Tallant was transferred to the safety department as fire protection engineer and subsequently was moved back to the engineering department as standardization engineer.

In the field department, where he has been assigned since 1929, he was engaged in engineering work related to drilling operations. In 1933, he was transferred to the production department a part of the field staff in Union's organization where he continued service until his promotion in January 1943. He has maintained headquarters at Santa Fe Springs, Calif., most of the time, but in April 1940, he was sent into the Rocky Mountain area in connection with exploration work which the company was doing at that time.

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Ralph D. Curtis, formerly petroleum engineer with Barnsdall Oil Co., is now a captain in the U. S. Army, Services of Supply, and is stationed in Washington, D. C.

L. David Wosk, Los Angeles, Calif., geologist and petroleum engineer and who has contributed several articles to The Oil and Gas Journal, has been commissioned a first lieutenant in the U. S. Army and has reported for assignment. Mrs. Wosk, a member of the WAAC, recently completed her training at Des Moines.

George L. Ballard, Panhandle Eastern Pipe Line Co., and **Franklin T. Rainey,** Ohio Fuel Gas Co., are members of the committee arranging the program for the American Gas Association's war conference on industrial and commercial gas at Detroit, Mich., March 11-12.

James G. Harris, former assistant engineer in the Houston, Tex., district for United Gas Pipe Line Co., has been promoted to assistant district engineer.

Frank C. Smith, president of the Houston Natural Gas Corp., Houston, Tex., was named president of the Southern Gas Association at a meeting in Memphis, Tenn., last week. He succeeds **Leslie B. Denning, Jr.,** of Lone Star Gas Co., Dallas, Tex. **Frank S. Kelly, Jr.,** Arkansas Louisiana Gas Co., and **Clayton L. Nairn,** New Orleans Public Service Co., were named vice presidents, and **L. L. Baxter,** Southern Union Gas Co., was named secretary-treasurer.

Earl Cosper, Nebraska production superintendent for Skelly Oil Co., and **Fred Sloan,** chief clerk in the Falls City, Neb., production office, have been transferred to Velma, Okla.

Bert Warner, formerly identified with several oil operators in the Texas Panhandle, is now production superintendent for McDanald Oil Co. in Houston, Tex.

W. W. Kendrick, formerly assistant district chief clerk of the Tomball natural-gas system of Humble Oil & Refining Co., Houston, Tex., has been promoted to district chief clerk of the Pledger natural-gas system.

I. L. Peterson, assistant superintendent of Standard Oil Co. of Ohio's No. 1 refinery, Cleveland, has been appointed a director of the National Association of Foremen.

Lt. M. B. Harrington, Jr., who was in the Gulf Coast division of the production department of Humble Oil & Refining Co., Houston, Tex., before he entered military service, has graduated from the Officers Candidate School at Fort Washington, Maryland, and is now an instructor of WAACs at Stephen F. Austin State Teachers College, Nacogdoches, Tex.

Dr. George Calingaert, director of chemical research, Ethyl Corp., has been named vice chairman for the 105th annual meeting of the American Chemical Society in Detroit, Mich., April 12-16.

Clarence G. Petersen, assistant manager in the control laboratory at Shell's Martinez refinery in California, has been promoted to department manager.

John Grier, drilling superintendent of Continental Oil Co. in California, has retired from active service which started in 1907 at Orcutt, Calif., for Union Oil Co. Mr. Grier was tendered a banquet recently which was attended by **M. H. Wheeler,** tool pusher for Continental at Ventura; **J. C. Craig,** San Joaquin Valley tool pusher and **L. J. Hopkins,** drilling foreman in the valley. Messrs. Grier, Hopkins and Craig were in charge of Continental's record deep well at Wasco which was drilled to 15,004 ft. in 1937-38.

S. E. Carlebois, Shell de Colombia; **Claude E. Gass,** Caribbean Petroleum Co.; **C. H. Strickland, R. H. Conners** and **A. F. Driskill,** Iraq Petroleum Co.; **W. T. Masters,** Tropical Oil Co.; **D. D. Hilyard,** Conselho Nacional du Petroleo; **George Witzlebow** and **E. E. Detter,** United British Oilfields of Trinidad; **J. C. Bentz van der Berg,** B.P.M., and **W. F. Parraga,** California Arabian Standard Oil Co., were the foreign oil men attending the annual meeting and dinner last month of the Los Angeles chapter of Nomads.

L. J. Gibson, who has been employed as an engineer by United Natural Gas Co., Oil City, Pa., for the past 18 years, resigned his position last week to accept a position in the planning and engineering department of Curtiss-Wright Aeronautical Corp. at Buffalo, N. Y.

Ralph T. Zook, president of Sloan & Zook Co., Bradford, Pa., is completing a 28-day Army orientation course at the Command and General Staff school, Fort Leavenworth, Kans. Mr. Zook was invited to take the course to see how the Army operates. Instruction covers the organization and operation of the services of supply and related branches.

Dr. George R. Gray, of the production research department, Humble Oil & Refining Co., Houston, Tex., is the new chairman of the Southeast Texas section of the American

Chemical Society. **H. M. Vaughn,** Gulf Oil Co., is vice chairman, and **E. P. Doremus, Jr.,** Abercrombie Co., is secretary-treasurer.

Lt. Edwin A. Anderson, who before entering the Army was drilling superintendent for West Production Co., Houston, Tex., received his commission in the Engineers Corps last month at Fort Belvoir, Va. He entered the Army last July as a volunteer officer candidate.

Shifts: **Robert R. Wheeler,** geologist, Shell Oil Co., Inc., Midland, Tex., to Carlsbad, N. M.; **W. P. Guinn,** superintendent, Humble Pipe Line Co., Houston to Cisco, Tex.; **B. B. Cox,** geologist, Socony-Vacuum Oil Co., Inc., New York City to Rushville, Ind.; **J. E. Beakey,** superintendent, Superior Oil Co., Lander, Wyo., to Whiteface, Tex.; **Eddie Reid,** superintendent, Arrow Drilling Co., Oklahoma City to Mount Vernon, Ill.; **Robert H. Tennant,** engineer, Seismograph Service Corp., Hobart, Okla., to Skelly Oil Co., Tulsa; **Dwight J. Evans,** engineer, Phillips Petroleum Co., Bartlesville, Okla., to Amherst, Tex.; **C. H. Jones,** engineer, Sinclair Refining Co., Mechanicsburg, Pa., to Columbus, Ohio.

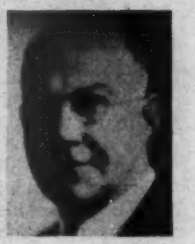
James E. Oliver, chief clerk in the proration and contamination department of Humble Pipe Line Co., Houston, Tex., and vice president of Region 2, Texas Junior Chamber of Commerce, was guest speaker at a founders-day banquet of the Tri-Cities Jaycees, held in the San Jacinto Inn, Houston.

Roy C. Cole, who was gager-pumper for Shell Oil Co., Inc., in the Whitecastle district of Iberville Parish, Louisiana, is now in the officers' candidate school at Fort Knox, Kentucky.

R. W. Miller, Jr., of Fifteen Oil Co., Houston, Tex., operating individually also in the Charenton field, St. Mary Parish, Louisiana, was elected oriental guide of Arabia Temple of the Shrine, Houston. **William H. Scott,** legal counsel for several independent oil producers, was chosen potentate. For years Mr. Scott has been active in work for crippled children, sponsored by Arabia Temple.

J. Woodward Martin, Dallas, Tex., manager of the Stargas department of Lone Star Gas Co., was the speaker at a recent meeting of the Gulf Coast chapter of Safety Engineers in the Texas State Hotel, Houston, Tex. His subject was "Safe Utilization of Butane Gas."

R. H. Wilhelm, U. S. Naval Reserve officer who has been on duty as inspector of naval petroleum reserves in California, has been advanced from lieutenant commander to full commander. **Harry P. Stole,** assistant inspector in the Los Angeles office of naval oil reserves, also has been advanced to a full commander's rank. They will be assistants to **Comr. W. H. Osgood,** who was recently transferred from the Los Angeles office of PAW to the naval reserves office.



I. A. O'Shaughnessy, St. Paul, Minn., president of Globe Oil & Refining Co., Wichita, Kans., and a member of the Petroleum Industry War Council, has been honored by the University of Notre Dame which has established the O'Shaughnessy Fine Arts Foundation in the College of Arts and Letters. The foundation was made possible by Mr. O'Shaughnessy's gift of $100,000 to Notre Dame just before Christmas.

Mandy Rieger, for years associated with his brother, the late Cy Rieger, in the oil business in the Texas Panhandle, has joined the engineer corps, oil division, of the Army. He received a commission as first lieutenant, and left for duty last week.

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Market Developments

Mid-Continent

DECISION of the Office of Price Administration to permit only moderate rises, if any, in the crude-oil market this week may react unfavorably on the quotations for products, although this result is purely speculative and is not yet supported by tangible evidence in the trade.

Refiners in the Mid-Continent area are still willing to purchase moderate amounts of motor-fuel in the spot market, but this prop under the gasoline trade is considerably diminished with the abolishment of tank-car shipments into the East Coast area.

Rumors circulated in the trade this week that the ban on eastern tank-car shipments may be revoked in the near future or at least administered on a more liberal basis with exceptions the rule rather than the unusual. Most observers, however, consider that the East Coast fuel-oil situation must be materially improved before serious consideration is given to resumption of ingress traffic in gasoline.

Calls for all grades of fuel oil continued this week to exceed available supplies. All long-term customers of Mid-Continent refiners are calling for maximum deliveries against contracts, particularly the railroads which are among the largest consumers in the Southwest. All manufacturers, directly and indirectly engaged in production of war materials, are calling for quantities of fuel oil exceeding previous requirements.

East Coast

NEW YORK.—While the oil-supply situation on the East Coast continued to deteriorate in the last week of January, there were indications that reversal in the trend may start within the next 10 days or 2 weeks. These indications are based on improved delivery by railroads, progress in providing better unloading facilities, increased use of train-load shipments, completion of pipe-line facilities and other developments. While these developments may be offset temporarily by severe cold weather or more or less permanently by increased exports from the East Coast, they otherwise indicate an impending improvement that may alleviate the severity of the shortage in February and succeeding months.

It was indicated last week that a limited priorities order which could be invoked in the event of local shortages which threatened war production or resulted in other emergencies would be issued in the near future. This order would not supplant the priorities list proposed earlier by the industry but would serve only as an emergency measure. The latter was sought so that the industry could escape any charges of discrimination in supplying consumers, a condition which will not be rectified by the expected order.

The Navy took action last week to insure bunker-fuel supplies for its own and merchant vessels by establishing its own pool in New York. In addition to insuring fuel oil for the demands of all United Nations vessels operating in the Third Naval District, the pool is also charged with maintaining supplies scheduled to be shipped abroad from the East Coast area for the Army.

Gulf Coast

HOUSTON, Tex.—Although a little confusion has accompanied operation of service stations in this territory under the new ruling forbidding them to be open for business more than 12 hours in any one day or more than 72 hours in a week, refiners and marketers say the regulation is having no really adverse effect on their business and that both sellers and buyers are adjusting themselves to the plan. Most of the station operators are keeping their places open 12 consecutive hours and are determining the opening and closing time, and also the day for complete closing, in cooperation with other station operators in the district so that retail buyers are subjected to a minimum of inconvenience.

Small independent refiners who have depended upon tank cars for shipment of their gasoline face serious difficulty under the Washington edict forbidding tank-car delivery of gasoline to the East Coast from other districts. The order came so unexpectedly that some cars, loaded for shipment from this area, had to be unloaded. Refiners who are tied in with the new "Bayou" pipe line running to Baton Rouge, La., from Houston and expected to be in operation this week, will escape severities of the order, for the Bayou line connects with the Plantation system operating between Baton Rouge and Greensboro, N. C. Thus, such refiners will not have to depend on tank cars, but can transport gasoline and other products to Greensboro or intermediate points.

Pacific Coast

LOS ANGELES, Calif.—There was very little trading during the week and the small quantity of gasoline that moved in this stagnant market was substantially below price ceilings. This strange condition in the spot market is surprising because although gasoline is "running out of refiners' ears" there is hope that an improvement will be made during the next few months. Obviously, if refiners can dispose of their naphtha for use in the Southern California Gas Co.'s butadiene plant they will be better off than operating in the retail market. Unfortunately this butadiene plant probably will not go into operation until next summer and in the meantime refiners must get along on a drastically reduced civilian demand.

Although stocks of gasoline are high, major operators are not anxious to sell and are turning down offers for gas oil and residuals. The amount of gasoline that is setting prices in the retail market is very small but nevertheless it is large enough to force competitors to meet prices. It is generally felt that prices for all products will improve later in the year especially after the butadiene plant goes into operation. This is especially true if heavy crude-oil prices are increased and residual quotations are increased to meet the higher cost of the base product.

A.P.I. REFINERY REPORT

Week Ended January 23, 1943

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks: Gasoline	Stocks: Residual	Stocks: Gas oil
Appalachian	157	2,807	495	583
Ind., Ill., Ky.	746	17,828	2,588	4,952
Okla., Kan., Mo.	320	7,202	1,348	1,544
Censored area*	1,586	37,992	10,963	18,443
Rockies	107	1,798	568	364
California	699	19,475	55,274	12,048
Total 1-23-43	3,615	87,102	71,216	38,034
Total 1-16-43	3,640	84,955	71,517	39,841
Total 1-24-42	3,874	99,345	90,764	42,307

Note: Refinery runs and stocks for week ended January 30, 1943, appear on Trends page.

*Reports combined on East Coast, Texas Gulf, Louisiana-Arkansas and Inland Texas at request of PAW.

CRUDE-OIL STOCKS

(Bureau of Mines Estimate)

Week ended:	Bbl. of crude*
January 23, 1943	233,733,000
January 16, 1943†	232,847,000
January 24, 1942	248,164,000

*Excludes heavy, unrefinable stocks in California. †Revised.

Refinery Prices

(Prices as of February 2)

Quotations are f.o.b. plant in cars and in cents per gallon except where otherwise noted. They are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils, and do not include marine lighterage charges.

REFINERY GASOLINE

Octane (A.S.T.M.):	†80	74-76	72-74	68-70	63-66
Mid-Continent*			5.875-6.000		5.500-5.625
Pennsylvania		6.750-7.000			
Gulf Coast‡	6.00-6.50		§5.750-6.250	§5.750-6.250	§5.250-5.750
Northeast Coast	9.80		9.2	9.2	
California		6.250-6.500	6.125-6.250	5.750-6.000	5.125-5.250

*Basis Group 3. †1939 C.F.R. (research method). ‡Integrated companies restricted to lowest prices. §Unleaded.

KEROSENE AND NO. 1 FUEL OIL

Gravity:	46	45	42-44	41-43	38-40
Mid-Continent*			4.500	4.375	
North Louisiana				4.500-4.750	
Pennsylvania	6.250-6.625	6.125-6.250			
California				4.500-5.500	4.250
Northeast Coast				6.80	
Gulf Coast				3.875	

*Basis Oklahoma Group 3.

TRACTOR, DIESEL, AND BUNKER FUEL OIL

Specifications:	46-48° G.	24 D.I.	48-52 D.I.	58 & above	Diesel bunkers	Bunker C
Mid-Continent*	4.125					
California		2.750-4.000			‡$1.35-1.45	$0.85-0.90
Gulf Coast			4.000	4.125	1.45	0.85
Northeast Coast				6.800	2.780	1.65
North Louisiana						†0.80 0.8

*Basis Oklahoma Group 3. †10-14° gravity. ‡Pacific Specification 200.

FURNACE OIL, GAS OIL, FUEL OIL

	No. 2	No. 3	No. 5	No. 6
Mid-Continent*	3.625-3.75¢	3.500-3.625	$0.85	$0.80
Pennsylvania (West)	5.875-6.125	5.875-6.000	†5.250-5.500	
Northeast Coast	6.7	6.7	1.95	1.65
Pacific Coast	5.5	5.5	†0.80-95	†0.80
Gulf Coast	3.875-4.0		1.65	0.85

*Basis Oklahoma Group 3. †36-40 gravity fuel oil. ‡Pacific Specification 300. §Pacific Specification 400.

NATURAL GASOLINE

Grades:	26-70	18-55
Oklahoma (Group 3)	3.875	4.650
North Texas	3.500	4.200
North Louisiana	3.625	4.350
California	4.875	5.500

LUBRICATING OILS

Bright and Steam Refined

OKLAHOMA (Group 3)—		
200-210 D, 10-25		27.00
150-160 D, 0-10		23.00
120-125 D, 0-10		22.00
Steam refined:		
600 dark green (untreated)	9.00	9.50
PENNSYLVANIA—		
Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash)		
10 pour point		30.50
15 pour point		29.50
25 pour point	25.00	28.00
Steam refined:		
600	15.00	16.00
650	15.50	16.50
600 flash	16.00	17.50
630 flash	17.00	17.50

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—	
0-10 pour point:	
200-3	15.00
300-3	18.00
500-3	19.50
600-3	20.00

Note: Viscous neutrals, 10-25 pour, quoted 0.5 cent under 0-10 oils.

Neutral Oils

CALIFORNIA—		
Pale oils:		
200-2½-3	7.00	7.75
400-3-4	7.25	8.00
600-3-4	8.75	11.00
Red oils:		
200-4-5	7.00	7.75
400-5-6	9.00	11.00
500-900, 5-6½	9.25	11.25
GULF COAST—		
Pale oils:		
200-3	8.50	8.75
300-3	9.00	9.25
500-3½	9.75	10.00
750-3½	10.00	10.25
2,000-4	10.50	10.75
3,000-4	12.25	12.50
PENNSYLVANIA—		
150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		37.50
10 pour point		36.50
15 pour point		35.50
25 pour point		30.00
200 vis. at 70° F., 3 color:		
Zero pour point		39.50
10 pour point		38.50
15 pour point		37.50
25 pour point		32.00

WAX

(Cents per pound)

OKLAHOMA (Group 3)—	
124-126 (A.m.p.) w.c. scale	4.250
PENNSYLVANIA (inland refineries)—	
122-124 (A.m.p.) w.c. scale	4.250
124-126 (A.m.p.) w.c. scale	4.250
NEW YORK—	
Wax in bags fully refined:	
130-132 (A.m.p.) wax	5.850
133-135 (A.m.p.) wax	6.180
Crude scale:	
124-126 (A.m.p.) w.s.	4.250
124-126 (A.m.p.) y.s.	4.250

TANK-WAGON PRICES IN 50 CITIES

(Gasoline prices based on regular grades, tax included, undivided dealer)

ATLANTIC AND NEW ENGLAND
(Socony-Vacuum Oil Co., Inc., and Atlantic Refining Co.)

	Dealer tank wagon	Com-bined tax	Kero. tank wag.
Baltimore, Md.	15.95	5.50	10.20
Boston, Mass.	14.90	4.50	9.80
Burlington, Vt.	16.90	5.50	10.10
Buffalo, N. Y.	16.20	5.50	10.60
Dover, Del.	16.70	5.50	12.00
Hartford, Conn.	15.60	4.50	9.70
Manchester, N. H.	17.30	5.50	10.80
Newark, N. J.	15.20	4.50	9.70
New York, N. Y.	16.10	5.50	9.80
Philadelphia, Pa.	16.20	5.50	11.65
Pittsburgh, Pa.	16.70	5.50	12.00
Portland, Me.	16.30	5.50	9.90
Providence, R. I.	15.00	4.50	9.60
Washington, D. C.	15.20	4.50	11.00
Average 14 cities	16.02	5.14	10.49

(All prices undivided dealer basis.)

CENTRAL
(Standard Oil Co. of Indiana, Standard Oil Co. of Ohio, Continental Oil Co., and Texas Co.)

	Dealer tank wagon	Com-bined tax	Kero. tank wag.
Chicago, Ill.	13.40	4.50	10.50
Cleveland, Ohio	15.00	5.50	*9.00
Dallas, Tex.	13.00	5.50	7.00
Des Moines, Iowa	14.40	4.50	9.80
Detroit, Mich.	14.40	4.50	9.60
Fargo, N. D.	16.90	5.50	11.30
Huron, S. D.	16.30	5.50	10.70
Indianapolis, Ind.	15.20	5.50	9.80
Little Rock, Ark.	17.50	8.00	10.00
Milwaukee, Wis.	16.10	5.50	10.50
Minneapolis, Minn.	15.40	5.50	10.30
Omaha, Neb.	15.40	6.50	9.80
Tulsa, Okla.	16.50	7.00	8.50
Wichita, Kans.	12.70	4.50	8.00
Average 14 cities	15.15	5.57	9.61

*Includes 1-cent state tax.

SOUTHEASTERN
(Standard Oil Companies of New Jersey, Kentucky, and Louisiana)

	Dealer tank wagon	Com-bined tax	Kero. tank wag.
Atlanta, Ga.	18.90	7.50	*11.50
Birmingham, Ala.	18.50	8.50	9.00
Charleston, S. C.	18.95	7.50	....
Charleston, W. Va.	19.25	6.50	13.30
Charlotte, N. C.	20.10	7.50	11.30
Jacksonville, Fla.	18.90	8.50	9.50
Jackson, Miss.	17.50	7.50	‡9.00
Louisville, Ky.	16.50	6.50	8.50
Memphis, Tenn.	17.90	8.50	10.50
New Orleans, La.	17.75	8.50	*10.00
Norfolk, Va.	17.45	6.50	12.00
Average 11 cities	18.34	7.50	10.46

*Includes 1-cent state tax.
‡Includes ½-cent state tax.

MIDWESTERN
(Continental Oil Co.)

	Dealer tank wagon	Com-bined tax	Kero. tank wag.
Albuquerque, N. M.	17.50	7.50	10.00
Boise, Idaho	20.10	6.50	16.30
Casper, Wyo.	17.00	5.50	12.00
Denver, Colo.	14.50	5.50	11.00
Helena, Mont.	17.00	6.50	13.00
Phoenix, Ariz.	18.50	6.50	12.50
Reno, Nev.	17.50	5.50	13.50
Salt Lake, Utah	18.50	6.50	14.50
Average 8 cities	17.58	6.25	12.88

PACIFIC COAST
(Standard Oil Co. of California)

	Dealer tank wagon	Com-bined tax	Kero. tank wag.
Portland, Ore.	17.00	6.50	13.50
San Francisco, Calif.	14.50	4.50	11.50
Seattle, Wash.	17.00	6.50	13.50
Average 3 cities	16.17	5.83	12.83
Average 50 cities	16.55	5.96	10.76

Weight indicators deserve good care

Information supplied by "Oil and Gas Journal"

Weight indicators, directly or indirectly, show the swivel load. Given the weight on the swivel, the weight on the bit is found by subtracting it from the total drill string weight. Then, from the string make-up and weight, the neutral point can be determined as properly in the drill collar or up in the drill pipe. Correct weight application often determines whether a hole is straight or crooked. Experience indicates safe weights for various depths and areas.

Sudden weight loss means a parted string to be fished for after coming out of the hole. Increased weight while coming out signals a tight spot calling for care in working the bit through. Sharp weight loss while lowering the drill stem indicates a bridge or shelf. Slow, hesitating weight loss means the bit is passing through cavings.

In fishing, the weight indicator shows when the fish is met — when the overshot passes over — when the fish is picked up. In case the drill stem sticks, it shows the total derrick load, insuring adequate safety margins. When sidetracking, it permits accurate weight application and adjustment of the angle of deviation.

Present weight indicators show swivel loads very accurately for instruments weighing loads 0 — 200 tons. They are valuable precision instruments and merit careful operation and maintenance as such.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

MOLYBDIC OXIDE BRIQUETTES • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Clima[illegible]-ly-[illegible]m [illegible]mpany

500 Fi[illegible]ve[illegible] • [illegible]ew York City

MOLY

Equipment Progress

Dow Chemical Awarded Two Army-Navy Flags

The United States is prepared to retaliate "in whatever quantities necessary, any time, any place" should the Axis resort to gas warfare, Major Gen. William N. Porter, chief of Chemical Warfare Service, declared recently in awarding two Army-Navy "E" flags to Dow Chemical Co.

Accepting the unique double award, Dr. Willard H. Dow, president, emphasized the importance of chemicals in modern warfare.

"More than 2,000 chemicals are needed to build an airplane. More than 200 different chemicals are required for a tank," he said.

"No one knows how many chemicals are necessary to win a war. Chemicals essential for peacetime are all necessary in increasing amounts in war."

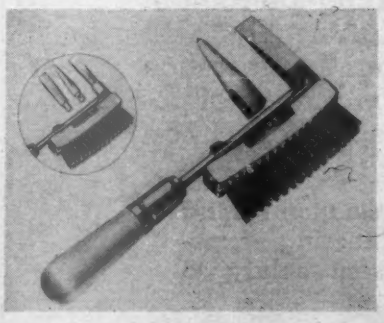
Dow, one of the world's largest producers of industrial chemicals, was complimented by General Porter for production which has been "in some instances double the capacity of your plants, and what is more, it has been consistent."

Also commended was the maintenance of high labor standards and employe relations.

Maj. Gen. William N. Porter, chief of chemical warfare service; James W. Driver, personnel director of Dow Chemical Co.; Capt. C. D. Swain, naval inspector of ordnance, and Dr. Willard H. Dow, president, Dow Chemical Co.

Atlas Weld-Cleaning Tool

A new and improved weld-cleaning tool for welders in shipyards, aircraft and tank plants, boiler and sheet metal shops, and for oil pipe line, factory maintenance and general welding work is now being manufactured under the trade name Dual-Tool by Atlas Welding Accessories Co., 307 Boulevard Building, Detroit, Mich.



The Dual-Tool combines a wire-bristle brush and a slap-removing bit in one unit and features a specially-developed brush holder which permits removal of brush for reversing or replacement by inserting screw driver or other sharp object at rear end of holder. An up and outward pry releases tension. Brush pops out. Reverse action for inserting and brush snaps in to a firm, rigid seat.

Every part of the tool is replaceable, and Atlas manufactures a complete line of replacement parts, including interchangeable cone and chisel bits.

Star Added to Flag

The Carteret Works of Foster Wheeler Corp. has won a star for excellence in the production of naval equipment at the end of 6 months following the original All Navy "E" award. In addition to receiving the Army-Navy "E" pennant "with Star" from the Navy, there was the award of a Minute Man flag by the Treasury Department in recognition of exceeding the goal set for the purchase of war bonds by the men and women of Carteret, which was made at the same ceremony.

Fitzgerald Heads Tulsa Nomads

P. E. FITZGERALD

Paul E. Fitzgerald, of Dowell Inc., Tulsa, was elected president of the Tulsa Chapter of Nomads at the annual dinner and meeting held January 28. Other officers elected were H. M. Cosgrove, executive manager of the Purchasing Agents Association of Tulsa, vice president; Shep Miers, vice president of the Southwest Supply Co., secretary and treasurer; G. W. Walton, sales manager of Unit Rig & Equipment Co., and C. O. Willson, editor of The Oil and Gas Journal, regents. Mrs. Ruth Sheldon Knowles, of the Petroleum Administration for War, was the principal speaker at the annual dinner.

Pullman Elected President Of Los Angeles Nomads

Henry Pullman, of Baker Oil Tools, Inc., was elected president of the Los Angeles chapter of Nomads at their recent annual meeting. Other officers elected are: Roland Smith, vice president; Wallace A. Sawdon, secretary; Tom Martin, assistant secretary; Elmer Smith, treasurer; Roger Henquet, assistant treasurer; J. V. Robinson, sergeant at arms, and George Trembley, deputy sergeant at arms.

The national regents elected to represent the chapter on the board of regents of the Nomads were W. F. Bettis and W. R. Martin. Plans for the fourth annual inaugural ball to be held in February were discussed and H. E. Cassidy, Lew Bronzan and Wallace Sawdon were appointed by President Bettis to aid the entertainment committee consisting of Roland Smith, chairman, and J. V. Robinson, in making final arrangements for this affair.

Ninth South African Firm Makes Meehanite Castings

J. McMeekan Co., Southern Rhodesia, Africa, is now a manufacturer of Meehanite castings, according to an announcement by Meehanite Metal Corp., Pittsburgh, Pa.

This company is the ninth manufacturing firm to go into the production of Meehanite castings in South Africa.

Classified Advertising

The Market Place for the Oil Industry

UNDISPLAYED RATE	DISPLAYED—PER INCH
8 CENTS A WORD, minimum charge $2 per insertion.	Classified display advertising set in single or double column style:
SITUATIONS WANTED, 4 cents a word, minimum charge $1.	1 inch . . . . . 1 time $7.00
BOX NUMBERS, count 9 words when replies are to be sent to our Tulsa Office.	1 inch . . . . . 13 times 6.50
10% DISCOUNT if 3 insertions are ordered at one time, with check accompanying order.	1 inch . . . . . 26 times 6.00
All classified advertising payable in advance.	1 inch . . . . . 39 times 5.50
	1 inch . . . . . 52 times 5.00
	Rates are governed by total space used within 12 months from date of first insertion. Credits are allowed when lower rates are earned.

FORMS CLOSE MONDAY NOON—PUBLISHED EACH THURSDAY

SITUATIONS WANTED

REFINERY ENGINEER—Age 42, Classification 3A. Experienced, Design, Construction, Operation and Maintenance of modern equipment. Box B-430, The Oil and Gas Journal, Tulsa, Okla.

REFINERY Superintendent or Process Foreman, now employed. Desires position with aggressive firm with future opportunities. 13 years' experience in the petroleum refining industry, 4 years' experience in the power industry. Familiar with modern operation, maintenance and construction methods. Box B-452, The Oil and Gas Journal, Tulsa, Okla.

REFINERY Engineer age 40, seventeen years design, maintenance, and operation. Box B-466, The Oil and Gas Journal, Tulsa, Okla.

REFINERY CONCRETE FOUNDATIONS. Design and construction. Drawings prepared by Registered Civil Engineer. P.O. Box 209, Pasadena, California.

INDEPENDENT Leaseman, age 40, married, draft exempt, High School education; experienced leasing large blocks in southeast, desires position with company as leaseman or scout. Ability and character reference best. Answer Box B-462, The Oil and Gas Journal, Tulsa, Okla.

EXPERIENCED Landman with many years major company service desires connection with active organization. Familiar with purchase of leases, royalty and mineral rights, right-of-way, title work and claim adjustments, in several states. Good background of ten years with large independent operator in production and drilling department. Successful in selecting and handling personnel. Age 43, Excellent health, Family, Draft classification 3-A-4. Box B-460, The Oil and Gas Journal, Tulsa, Okla.

PRODUCTION AND DRILLING SUPERINTENDENT, 15 years' experience in Kansas, Louisiana, and Illinois; Draft classification 4-H; desires permanent employment with reliable company. Box B-471, The Oil and Gas Journal, Tulsa, Okla.

HELP WANTED

EXCEPTIONAL opportunity for engineering writer familiar with drilling and producing operations. Work will enable person to keep abreast of latest developments in field and development practices. Previous experience in writing not required. Replies strictly confidential. Box B-461, The Oil and Gas Journal, Tulsa, Okla.

HELP WANTED

SUPERINTENDENT wanted for 5000 barrel refinery, central Kansas, making essential war products. Technical man with Dubbs cracking experience preferred. Give complete information first letter. Box B-472, The Oil and Gas Journal, Tulsa, Okla.

HELP WANTED

WANTED
ASPHALT TECHNOLOGIST

Position requires man with technical degree who has had five years' experience in the manufacture and blending of roofing and paving asphalts. Location, middle West with medium sized oil company. Our employees know of this advertisement. Box B-453, The Oil and Gas Journal, Tulsa, Okla.

WANTED: Refinery Engineer who has had recent active contact with design or operation of modern refining processes, preferably plants for production of hundred octane aviation gasoline. Must be graduate engineer. An attractive connection in large organization is available for the right man. Write Drawer 2481 or telephone 2-3107, Tulsa, Okla.

PROCESS ENGINEERS

Graduate Chemical Engineer or Chemist with several years experience in refinery or oil field on design and operation of light end equipment. Permanent position. Men employed in war industries will not be considered. Reply must state experience, education, age, draft status and salary expected. Box B-441, The Oil and Gas Journal, Tulsa, Okla.

JOINT TURNER. Must be thoroughly experienced in oil field work. Both hourly and piece-work rates on liberal basis. 48 or more hours per work week. 100% War Work. Steady job. Applications from those now employed in war industries will not be considered. Give complete information in letter. The Star Drilling Machine Company, Akron, Ohio.

WANTED: Geological Engineer not subject to draft, experienced in Oklahoma and Kansas for well completions, scouting, sample, and subsurface work assisting district geologist independent oil company. Medium salary and expenses outside Tulsa. War manpower commission requests that applications from those now employed in war industries not be considered. Address Box B-465, The Oil and Gas Journal, Tulsa, Okla.

WANTED FOR PACIFIC COAST
WAR PROJECTS

Mechanical, Chemical and Process Engineers

We need immediately for important war projects engineers experienced in designing petroleum and chemical plants. You will be assigned to our home office organization. Permanency of position will be dependent upon ability.

Airmail your application stating education, engineering experience and present salary to Personnel Manager.

BECHTEL-McCONE-PARSONS CORPORATION

Engineers — Constructors
601 West Fifth Street, Los Angeles, California

CLASSIFIED ADVERTISING — EQUIPMENT FOR SALE

NEW GATE AND GLOBE VALVES ALL NEW—SPECIAL OFFERING

Must be sold in one lot

24—¾" Series 90 screwed, OS&Y Gate Valves.
24—¾" Series 90 screwed, OS&Y Globe Valves.
50—1" Series 90 flanged, OS&Y Globe Valves.
50—1" Series 90 flanged, OS&Y Gate Valves.
42—1½" Series 90 flanged, OS&Y Gate Valves.
32—2" Series 90 flanged, OS&Y Gate Valves.
61—3" Series 90 flanged, OS&Y Gate Valves.
33—4" Series 90 flanged, OS&Y Gate Valves.

All Standard Dimensions. Approximately $25,000.00 in repair parts furnished with the above valves. Total new value of valves alone $65,000.00.

Will Sacrifice. Wire, Phone or Write

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry
Union Ave. at 21st Street

Robt. W. Duden
Tulsa, Oklahoma

---

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio.

FOR SALE — A large stock of reconditioned valves and fittings suitable for refinery and pipe line service. Inquire Eason Oil Company, Enid, Okla.

DIESEL ENGINES

Large selection—all sizes and types. Generator units, marine engines, gasoline engines, auxiliaries — also boilers, steam engines, turbo generators.

Complete information on request.

A. G. SCHOONMAKER COMPANY
50 Church St. New York, N. Y.
Phone—Worth 2-0455-6-7

USED Cranes, Shovels, Draglines, Clamshells, Graders, Pumps, Compressors, Generators, Gasoline and Electric Motors, and other Contractors' Equipment. L. A. ROUNTREE, 362 Pierce Street, Gary, Indiana.

Used Engines, and Compressors,
We Rebuild and Guarantee
L. F. SMITH CO.
217 W. Archer, Tulsa, Okla.

Second hand Oklahoma City alloyed sucker rods, ¾", ⅞" and 1".
Sucker Rods, Fishing Tools, Tubing Spiders, Tubing Catchers, all sizes.
Structural Steel and Reinforcing Rods.

M. R. TRAVIS
1702 S. Boulder Tulsa, Oklahoma.

DIESEL—GAS—ENGINES

Large selection — All sizes and types. Generator units, marine engines, gasoline engines, auxiliaries—boilers, steam engines, and turbo-generator sets.

Complete information on request.

A. G. SCHOONMAKER COMPANY
48 Church Street, New York, N. Y.

FOR SALE—Two 15x10 Chicago Pneumatic Compressors less motors or power units. In excellent condition, suitable for low pressure service. Inquire Eason Oil Company, Enid, Okla.

FOR SALE: At Oklahoma City 4 Parkersburg #4901-C, 424,000# capacity, 123' Rotary Derricks. Cities Service Oil Co., Patridge, Bartlesville, Okla.

FOR SALE: Two 250 hp. boilers, two stage air compressor 75 kw. ac. generator, ammonia condensers, receivers, pumps, hoists, motors, absorbers, generators, valves and fittings. Must dismantle immediately. Complete Dead Weight Gauge Tester, Watt Hour Meter, 125 Volt, 150 Amp. Capital Ice Refrigerating Co., Indianapolis, Indiana.

FOR SALE: Cyclone—All Steel Cyclone Machine—New—No. 46—Oil Field Type—Air Speed Spudder—Wire Line—Portable Drilling Machine. Semi-trailer type; Equipped with 4-cylinder Cyclone Engine. Capacity Rating—2000-3000 feet. Tools handled—1800-2000 pounds. Holes 6" to 15" diameter. Telescoping Derrick 51-ft. high especially suitable for drilling deep water wells or oil country service. Available for immediate shipment. For Further information write, THE SANDERSON CYCLONE DRILL CO., Orrville, Ohio.

FOR SALE—One partial list steam rotary equipment less boilers, rotary table, traveling block, swivel, located near Coyle, Oklahoma, priced right to sell. Inquire T. T. Eason and Company. Enid. Okla.

HORIZONTAL STEEL TANKS

6—10 Ft. dia. by 30 Ft. Long.
2—10 Ft. dia. by 29 Ft. 6 In. Long.
2—9 Ft. dia. by 30 Ft. Long.
10 Above Tanks in Western Kansas,
3—4,000 Gal., 2—6,500 Gal.
2—10,000 Gal. in Ohio and Pennsylvania.

VERTICAL TANKS

29,000 Bbl. 90'6" x 25'6"
19,600 Bbl. 75' x 25'5"
2—7,500 Bbl. 44' x 26'
5,500 Bbl. 37'6" x 27'6".

Located in the East

1500 BBL. ATMOSPHERIC DISTILLATION REFINERY

700,000 Gal. Storage Cap., 1500 Bbl. Tube Still, 1500 Bbl. Fractionating Tower, 150 H.P. Boiler, Pumps, Compressors, Condensers, Heat Exchangers, Agitators, Loading Rack, etc.

R. C. STANHOPE, INC.
60 East 42nd St. New York, N. Y.

FOR SALE—One #6 Type D-1618 Marley Tapered Type Cooling Tower; capacity 600 GPM; priced right. Inquire Eason Oil Company, Enid, Okla.

5—7½"x20" Type VS, 500-lb. W. P. Clark Compressor Cylinders complete with clearance pockets. Call or write Cimarron Gasoline Corp., Box 246, Coyle, Okla.

4—40 H.P. used Webber gas engines completely rebuilt and guaranteed by Borger Gas Engine Company; also 1—40 H.P. used Franklin gas engine. Full particulars on request. Haze & McGill, 516 Harrison Street, Amarillo, Texas.

FOR SALE: At Oklahoma City one rock or sand, elevated, steel frame, bin. Will load two trucks at one time. Cities Service Oil Co., Patridge, Bartlesville, Okla.

ONE RL Cardwell Double Drum Spudder. Mechanically A-1 shape. Complete with lines and tools. Address 2501 North Hudson, Oklahoma City, Oklahoma.

3—D8 Caterpillar Diesel tractors—12 yd. Scrapers—Bulldozers; 9 Kohler 1500 watt light plants; 1—5,000 watt Delco plant; 2—2500 watt Delco plants; 200 HP Fairbanks-Morse 175 KVA Light Plant 2300 volt; 100 HP Fairbanks-Morse 75 KVA 2300 volt. We buy Diesel Light Plants—Shovels—Draglines. Machinery Sales Company, 1718 Walnut, Kansas City, Mo.

FOR SALE—Two 10¾ in. Hughes 4000# test reconditioned valves in perfect shape. Also many other sizes. James W. Lomax, 812 Esperson Bldg., Houston, Texas.

1—4" Shell 4' x 40' Forged Steel Reaction Chamber
1—½" Shell 5' x 74'—4000 barrel cap.—Crude Oil Fractionator with Trays.
120—Pieces 3" I. D.—3½" O. D.—30' long—Chrome Tubes.
30—Pieces 3½" I. D.—4" O. D.—21' to 28' long—Chrome Tubes.
162—3½" O. D.—6½" Centers—Chrome Key Headers.
30—Pumps, various sizes and types.

A. C. BARTSCH
BOX 127, FOREST PARK, ILLINOIS

SPECIAL OFFER
IMMEDIATE SHIPMENT

OXYGEN-ACETYLENE WELDING HOSE SETS

Guaranteed—Heavy Duty
Standard Size—Double Braid
Samples furnished on request

Each set consists of OXYGEN hose (BLACK) and ACETYLENE hose (RED) with standard brass couplings attached to fit all makes of torches and gauges.

Length set	Price per set
12½ Ft. set	$ 3.10
25 Ft. set	5.60
50 Ft. set	10.60
75 Ft. set	15.60
100 Ft. set	20.60
Connector set	.30

Hose also furnished in continuous length reels of approximately 250 ft. and 500 ft. lengths.

OXYGEN HOSE	10c per ft.
ACETYLENE HOSE	10c per ft.
STANDARD COUPLINGS	15c each

Prices net—F.O.B. New York

CARLYLE RUBBER CO., Inc.
62 Park Place New York, N. Y.

Classified Advertising

EQUIPMENT FOR SALE

FOR SALE — One complete steam rotary outfit less boilers, located near Coyle, Oklahoma, priced to sell. Inquire T. T. Eason and Company, Enid, Okla.

COUPLINGS

2500—Brand new 13", OD casing couplings, 8-V thread, priced to sell. Louisiana Iron & Supply Company, Longview, Texas.

FOR SALE: Two 110-HP Miller gas driven twin cylinder compressors. Priced right. Inquire Eason Oil Co., Enid, Okla.

For Sale- RAIL OIL PLANT

15—10,000 gal. tanks, some with coils
In the Heart of Chicago Industry
Most Suitable for Fuel Oils
FELDMAN PET. 544 W. Roosevelt HArrison 3500

EQUIPMENT FOR SALE

FOR SALE—Approx. 6500 ft. 6⅝" OD 25.20# drill pipe with Reed Full Hole Shrink Grip Tool Joints, A-1 condition. Inquire T. T. Eason and Company, Enid, Okla.

1—13¼" x 16 Reid twin diesel engine with OCS Jack shaft and clutch mounted on skids in first class condition having drilled one well 6500 deep. Fort Worth Pipe & Supply Co., Fort Worth, Texas. Phone 2-1204.

FOR SALE: Four Gasoline Storage tanks, 10' x 20' Horizontal Welded steel. Capacity 10,000 gallons. Excellent condition. Located Kaw City, Okla. Two 1500 Bbl. Flat-Seam API Bolted Tanks now in use, Okla. City. John Irby, Box 4387, Oklahoma City, Okla.

FOR SALE OR TRADE: Complete Cable Tool Drilling Rig with 85 H.P. Boiler, Ajax Steam Engine Complete Tools 6" to 12", also 96' Angle Iron Derrick, Mead, Kansas. John Irby, Box 4387, Oklahoma City, Okla.

FOR SALE—2,500 BBL. CRACKING PLANT

1—Approx. 2500 Bbl. capacity, double end firing cracking still consisting of approximately:

35—3½ OD x 2½ ID x 24' long side tubes
47—3½ OD x 2½ ID x 24' long side tubes
69—3½ OD x 2½ ID x 24' long roof tubes (In 3 banks)
157—3½ OD x 2½ ID x 24' convection tubes (1 bank 68 tubes, 1 bank 69 tubes) All equipped with 2 hole headers.

Complete steel structure and walls and supported arch and transite sides and roof. 3 Sets of Natfonal Combination burners (incomplete) with burner refractory tiles on each end.
Steel welded stack 5'3" x 90', 45 ft. ¼" plate, 45 ft. No. 8 gauge plate. Complete piping from Bubble tower to pipe still with 1500 lb. steel valves and fittings. Still can be operated at 900 to 950° F. at 900 to 1000 lb. press.

1—Bubble Tower 8'6 ID x 52-0 overall ⅜" plate wall and heads, 8-0 skirt, 42-0 tangent, 40 lb. operating pressure. Insulated and weather proofed by steel jacket. Complete interconnecting piping between still, bubble tower, vapor separator, overhead condenser box and accumulator (Rundown) tank.

1—Overhead condenser box approx. 22' wide 48' long x 10' deep with overhead condensers installed inside of it as follows: 8 sections 3" pipe 2 wide x 15 high—240 tubes; 1 section 3" pipe 2 wide x 13 high—26 tubes. Total 266 tubes. These sections are flanged to approx. 16' vapor header. Complete 12" overhead vapor line from Bubble Tower to Condensers. Complete 8" water piping for condensers.

1—Accumulator (Or Rundown) Tank. 8' ID x 21-9 overall, 15-0 tangent to tangent, 5-0 skirt, all ⅜" wall, skirt and heads. Complete with pressure distillate piping, vapor piping, back pressure regulator and liquid level regulator.

1—Fuel Oil Cooler Box (Bubble Tower bottoms) 1—14' x 24' x 8' (all dimensions are approximate) consisting of 96—4" pipe coils with cast iron return bends. Complete with piping.

1—Wilson-Snyder Reciprocating Hot Oil Steam Pump size 25" x 36⅜" x 7" x 24". 1500 to 2000 lb.

2—7 x 4½ x 10 Gardner Reciprocating Steam Pumps.

4—5¼ x 3½ x 5 Gardner Reciprocating Steam Pumps.

1—Fairbanks-Morse centrifugal pump No. 116811, 3" suction, 2" discharge, type ILS, direct connected to F&M 15 HP 440 V, 3 ph, 60 cy, 3600 RPM frame 3D electric motor.

1—Dayton Dowd centrifugal pump, 8" suction, 6" discharge, direct connected to GE type FT501, 20 HP, 1800 RPM, 220 V, 3 ph, 60 cy, elec. motor.

1—Viking Rotary Pump No. 1130259, Model 2-11X1 mounted on common base to ¾ HP 1800 RPM 3 ph 60 cy 220 V frame 2AA F&M electric motor.

1—B&W Stirling Boiler 250 HP 238—3¼ tubes, 1 steam drum 36" dia. 1 steam drum 42" dia. 1 Mud drum 36" dia. 5-3 x 110-0 steel smoke stack, 60 ft. ¼" and 50 ft. No. 8 gauge, welded.

3—10,000 bbl. steel riveted umbrella roof steel storage tanks.

2—6,500 bbl. steel riveted cone roof steel storage tanks.

2—10 x 30 horizontal steel storage tanks, riveted, 18000 gallons cap.

4—8-7 x 25-0 welded horizontal storage tanks, 10,041 gallons capacity.

2—5-0 x 25-0 riveted horizontal storage tanks, 3618 gallons cap.

1—Brown Pyrometer, 3 point NC couple, Chart No. 3352, range 0-1000, resistance of instrument 333, temp. Recorder Controller.

1—Brown Pyrometer 3 point NC couple Chart No. 3381, range 0-400 resistance of instrument 197 External 16. Ser. 67744. Temp. Recorder Controller.

1—Brown Pyrometer single point range 400° dial has range to 600° Chart 3381. Resistance 186, External 16.

1—Brown 2 point pressure recorder 0-1500 lbs. Chart No. 2219.

1—Brown Indicating Pyrometer 0-1200 with 12 point switch 12" Face Indicating gages; 2—0-1500 lb.; 1—0-200 lb.; 3—0-150 lb.; 3—0-50 lb., 1—0-15 lb.

1—Foxboro Flow meter 0-20.

1—Foxboro Flow Meter 0-12.5.

1—2 range Foxboro Vacuum Controller 1 range 0-1 by 10th, 1 range 0-2 by 10ths.

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EQUIPMENT FOR SALE

FOR SALE: Surplus Cummins Diesel Engine H-600, overhauled. Located Great Bend, Kansas. $2,000.00. Approximately 2,000 ft. 5½" OD hydraulic left-hand thread fishing pipe, weight 38# per foot. 2,200 ft. 6" used drill pipe located Pampa, Texas. Mercury Drilling Company, Tulsa, Okla.

COUPLINGS: 5000 pcs. 2½" line, 2000 pcs. 5½" OD, 500 pcs. 7" OD, 100 pcs. 16" OD casing. New, perfect, Mill gauged. Sold on priority rating only. JULIUS M. FOGELMAN, Reading, Penna.

FOR SALE: Portable Lincoln 300 Amp. Electric Welding Unit, Stutz motor, Mounted on good tires, all A-One condition. Price $575.00. General Tool & Supply Co., Box 4387, Oklahoma City, Okla.

FOR SALE: 1", 1⅛", 1¼" PLOW and Improved PLOW steel Wire Rope; WIRE and Hemp centers; different lengths; WANTED: 50 to 200 Horsepower Locomotive Type, Vertical or Economic Boilers, CODE; 125 to 350 Horsepower Uniflow or Diesel Engines, with or without Generators; give description and prices. Box B-474, The Oil and Gas Journal, Tulsa, Okla.

EQUIPMENT WANTED

WANTED — Dynamometer. Suitable for use with Chevrolet Test Engine. Reply to Box B-446, The Oil and Gas Journal, Tulsa, Okla.

WANT TO BUY two or three second hand heavy field storage tanks with roofs from 10,000 to 80,000 bbl. capacity, either welded or riveted. Please state location of tanks and specifications together with price. Box B-450, The Oil and Gas Journal, Tulsa, Okla.

WANT TO BUY: PA-100 h.p. International Engines. FOR SALE: 1000-barrel riveted tank, several 500-barrel riveted tanks. Address Box 886, Sapulpa, Oklahoma.

DIESEL ENGINES WANTED
1500 HP in one or more units with or without Generators. Single unit preferred. Give full information. Box B-418, The Oil and Gas Journal, Tulsa, Okla.

WANTED: All or any part of 2800 barrel reforming unit. WANTED: 40 G.P.M. 1000 pound pressure centrifugal or reciprocating pump. Box B-470, The Oil and Gas Journal, Tulsa, Okla.

WANTED
Abandoned Pipe Lines, in or out of the ground, Oil Wells, Steel Buildings and Steel Storage Tanks of all sizes.
JOS. GREENSPON'S SON PIPE CORP.
National Stock Yards, St. Clair Co., Illinois.

REPORTS

WEEKLY scout reports on all drilling wells Montana and Wyoming with Alberta and Dakota coverage, $2 yearly. Montana Oil and Mining Journal, Great Falls, Mont.

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BUSINESS OPPORTUNITIES

OPERATOR wants financial group to underwrite partial cost of drilling wells to offset production in Oklahoma. Box B-447, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE: Petroleum by-product manufacturing plant. Located east Texas. Completely equipped and operating. Opportunity for expansion excellent. Plenty raw material. No labor trouble. Only moderate investment necessary. Sacrificing due to serious illness President and General Manager. A clean-cut, legitimate and unusual opportunity. 3932 Bryn Mawr, Dallas, Texas.

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Canadian Fields

(Continued from Page 76)

Oil Shortage Seen

A difficult situation is anticipated as a result of the decline in Turner Valley crude production and the falling off of available Montana crude supplies which have heretofore been imported to help meet the heavy demand for petroleum products in the prairie provinces. It is estimated that the British Commonwealth Air Training Plan alone requires approximately 60,000 bbl. of high-test gasoline daily, a large proportion of this being consumed in the prairie provinces. The opening of the Alaska highway is expected to accentuate the demand, though this may be partly met by production from the Fort Norman field. Crude production from Turner Valley now runs between 26,000 and 27,000 bbl. daily, compared with a peak of around 31,000 last winter, and new completions are not sufficient to offset the gradual decline in the older wells. Intensive drilling on proven acreage in Turner Valley might temporarily improve the production, but so far, wildcatting operations in other sections of Alberta have failed to open any similar field.

Government May Assist

Plans are under consideration by the Dominion Government for financial assistance in the drilling of border line or outpost wells in Turner Valley, with a view to extending the producing area and encouraging exploratory work where there are good chances of securing results.

CRUDE-OIL PRICES

Representative selected crude prices from all sections of the country appear below:

East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Illinois basin	1.37
Pecos County, Texas	.95
Bradford, Pennsylvania	3.00
Van, Van Zandt County, Texas*	1.08

*No change since 5-21-41.

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity—	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast Texas	West Texas*
18-18.9	$0.80	....	....	....
19-19.9	.84	....	$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9	....	1.07	1.30	.94
32-32.9	....	1.09	1.32	.96
33-33.9	....	1.11	1.34	.98
34-34.9	....	1.13	1.36	1.00
35-35.9	....	1.15	1.38	1.02
36-36.9	....	1.17	1.40	1.04
37-37.9	....	1.19	1.42	1.06
38-38.9	....	1.21	1.44	1.08
39-39.9	....	1.23	1.46	1.10
40 and above	....	1.25	1.48	1.12

*Includes Lea County, New Mexico.

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Journalisms:

COMMENTS are coming in regarding the Annual Statistical Number with particular reference to the reserve estimates presented. Generally the comments are complimentary but there have been those who question the estimates for certain fields. As regards these comments it is necessary to keep in mind the Journal's policy of long standing in regard to reserves. In new fields, as in the older areas, the reserves are estimated on a basis of oil definitely established by the drill. One successful test on a new structure may ultimately result in the discovery of many millions of barrels of oil. But if only one well has been completed at the end of the year the Journal's reserve figure usually is measured in thousands or hundreds of thousands of barrels. Also the reserve data are as of January 1, 1943, and do not take into consideration drilling developments since the first of the year.

CALENDAR

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, New York, February 15-18, 1943.

March

SOUTHERN SAFETY CONFERENCE, fifth annual meeting, Hotel Peabody, Memphis, Tenn., March 1-2.

AMERICAN GAS ASSOCIATION, war conference on industrial and commercial operations, Detroit, Mich., March 11-12.

April

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, annual meeting, Texas Hotel, Fort Worth, Tex., April 7-9.

AMERICAN PETROLEUM INSTITUTE, Division of Production, Eastern district, William Penn Hotel, Pittsburgh, Pa., April 8-9, 1943.

AMERICAN CHEMICAL SOCIETY 105th annual meeting, Detroit, Mich., April 12-16.

NATURAL GASOLINE ASSOCIATION OF AMERICA, twenty-second annual meeting, Baker Hotel, Dallas, Tex., April 14-16.

May

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, annual meeting, Houston, Tex., May 5-6, 1943.

ARCH FOSTER returned home this week after spending the entire month of January at several points east of the Mississippi River. The Journal's refinery editor after all-night rides on buses in western Pennsylvania, riding day coaches at night with an occasional upper berth has up-to-date information on the nation's transportation and hotel situation. He also picked up considerable data as to what is going on in petroleum's manufacturing activities under war conditions and information in addition to that reported in this issue will be found in the February 11 issue.

ONE field concerning whose reserves there is considerable argument is the new Quitman pool in Wood County, Texas. At the end of the year it was known that there was a very large structure and there was a good well on it. That well proved sand conditions and saturation for some 40 acres. There is considerable difference between the Quitman reservoir and the Coke reservoir in the same sand and in the same county. The oil found in the two pools is very different. Until a "reservoiroscope" is invented and we can see the pay, we can guess that the Quitman reservoir will cover anything from 40 acres to some 15 square miles. The 40-acre reservoir is known, the larger one will be known. As the field develops, Journal readers will be kept in touch with its growth. For example, next week Harry Simons of the Journal staff will tell of developments in the field to date with special emphasis on the economics involved in the two methods of trying to keep the discovery well straight.

THERE has been widespread speculation over the possibilities of extracting valuable chemicals from oil-field brines for many years. The rise in importance of magnesium in recent years has increased interest in the subject. Next week, the Journal will contain the results of a long study of the possible utilization of oil-field brines in Oklahoma by B. W. Logue of the Texas Co.

IN speaking of the need of finding new fields, E. DeGolyer has frequently referred to the lack of new prospecting methods to replace those which have apparently seen their best days. He says that none are in sight. In this, Mr. DeGolyer runs counter to the views of an increasing number of correspondents who have the new methods all ready. Unfortunately they do not outline these methods in detail but content themselves with a discussion of the geological background of the problem. All that we can divulge, therefore, is that the methods range from the invocation of divine guidance to the tracing of channels leading from the mother pools which are 95,040 ft. below the surface.

THE crossing of the Mississippi River by the Big Inch line was an engineering feat of no mean magnitude. This and other recent construction features will be explained in an article by Paul Reed of the Journal's staff in the Engineering and Operating Section next week.

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